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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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PRACTICAL MEDICINE.

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON THE VARIOUS FORMS OF MALARIOUS AND MALARIOID DISEASE.

By Dr. C. HANDFIELD JONES, F.R.S., Phys. to St. Mary's Hospital.

The following review of one group of diseases may perchance aid some in obtaining a clearer view of their pathology, of the meaning of the various morbid phenomena they present, and of the mode of treatment that should be adopted in unusual and perplexing conditions.

It may be well to premise the following.

1. The sympathetic plexuses are given off from special ganglionic centres, having communications chiefly of the nature of commissural connections with the cerebro-spinal system. The ultimate ramifications of the plexuses are almost wholly made up of the special sympathetic fibres, mingled with very few of the tubular kind. There can be no doubt that the sympathetic centres are capable of a distinct and independent action, apart from the cerebro-spinal.

2. The sympathetic plexuses are distributed on the arteries of the abdominal organs, the thoracic, and the cranial.

3. Paralysis of these plexuses dilates the arteries they accompany, and increases heat and tissue change in the locality where they are distributed; it establishes active hyperæmia, which in states of debility may pass into inflammation.

4. The arteries of the rest of the body probably receive vaso-motor nerves from the cerebro-spinal which accompany them; the former are of the same structure as the sympathetic, and it may be considered probable that a lesion of them would produce similar effects. I have found these vaso-motor nerves on careful microscopic examination, most distinctly, in the skin of the fingers and dorsum of the foot. There can scarcely be any doubt of their existence in other parts, but the search for them is very difficult on account of the subcutaneous fat and fibrous tissue.

5. The action of malarious poison is sometimes paralysing, at others irritating. Neuralgic pain, rigors, or convulsions, must be regarded as signs of irritation; numbness, coma, or loss of muscular power, as signs of paralysing influence. These two effects may be produced at the same time in different nervous structures of the same body.

6. It is probable that the nervous system is specially affected by malarious poison; (*a*) because certain diseases of the head (otitis) produce paroxysms exactly resembling those of ague; (*b*) because neuralgia is a common result of its action and paralysis not unfrequent; (*c*) because means which arouse and invigorate the nervous system, such as cheerful excitement, ward off the disease, while all depressing emotions induce it; (*d*) because quinine, the best remedy for malarious disorders, acts on the brain, producing, in over doses, deafness and sometimes convulsions; and opium, a drug of positive cerebral action, is also efficient in some conditions of malarious disease; (*e*) because confirmed malarious disease especially prostrates and stupefies the nervous power, and because this is also often the effect of an incipient attack.

7. The greater prevalence of malarious disease at some periods than at others

seems to be ascribable to the medical constitution of the year rather than to a greater production of poison. If the tendency is to high (sthenic) inflammatory disorder, there will be little of ague and kindred affections; if the tendency is to cause a lowered state of *vis nervosa*, if nervous affections predominate, then malarious diseases, or those that resemble them, will be common also. It is probable that the heat of tropical countries renders the endemic disorders so severe as they are, not only by its generating more and more powerful malarious poison, but by enfeebling the nervous system, diminishing its equilibrium and tone, and so rendering it more liable to *bouleversement*.

8. There seems reason to think that other poisons besides the marsh miasm may act on the nervous system in a very similar manner, producing phenomena almost or quite identical with those of true malarious disease. The poison of influenza certainly seems capable of doing this.

9. The type of disease which prevails at present appears to be very favourable to the occurrence of phenomena of nerve-disorder, either of a prostrating or irritating kind, and of such disorders of the vascular system as are in great measure referable to a debilitated condition of its own special nerves.

The phenomena of the first stage of a complete ague paroxysm are depressed action of the heart, contracted and pale skin, neuralgic pains, irritation of motor nerves (rigors), arrest of secretions, short and laboured respiration, cerebral debility. The temperature of the blood is rising, and congestion is taking place in internal organs. The vitality of the various organs is partially prostrated, as by a shock, and this has no small share in promoting the occurrence of congestions.

This stage may be replaced by an attack of convulsions, or by a profound sleep from which the patient awakes in a violent fever.

All the above phenomena may be regarded as the results of a poisonous influence operating on the cerebro-spinal and sympathetic nervous systems. This acts eminently on the solar plexus, occasioning a sense of debility and distress about the epigastrium, paralyses the various plexuses which are offshoots from the solar, as well as others which are formed by the abdominal sympathetic, from which result dilatation of arteries, increased heat of blood, and local hyperæmia. At the same time the cerebro-spinal system is affected, in some parts debilitated, in others irritated. The hemispheres of the brain are evidently weakened and enfeebled in their actings. The sensory nerves are irritated, giving rise to neuralgic pains, and the motor, being similarly affected, produce the rigors. The shrinking of the skin is produced by the contraction of some organic muscular fibres in its corium, as well as by the occlusion of its arterioles. The arrest of the secretions shows that the vital power of the organs producing them is impaired, or in abeyance. The action of the heart is in most cases directly enfeebled, just as the contractile coat of the arteries is; sometimes, however, as described by Dr. Bell in cholera, and as I have seen in cardiac neuralgia associated with ague, it is rather enchained and embarrassed in its working by an abnormal, irritating stimulus. If death occurred during the latter state (which seems to be characterised by a distressing sense of cardiac oppression), I should expect to find the heart firmly contracted, as was observed in those dying of cholera by Virchow, and by Reinhardt and Leubuscher. The two latter observers mention that their examinations were made on those who died in the algide stage. The short and laboured respiration depends in part on congestion taking place in the lungs, but still more, I expect, on disordered innervation of the phrenic and other respiratory nerves. When the voluntary muscles and heart are deranged from their healthy action by disorder of their nerves as we have seen, it is only to be expected that the respiratory muscles should suffer in a like way. In the case of the cold stage being replaced by an attack of convulsions, or one of coma, it may be supposed that the morbid influence has operated with unusual force on the principal nervous centres devoted to voluntary motion in the first instance, and on the cortical substance of the hemispheres in the second.

The phenomena of the second stage are increased action of the heart, relaxation of the cutaneous arteries, paralysis of their vaso-motor nerves, the condition of other parts remaining about the same. The congestions commenced in the first stage are now apt to be increased as the blood stream is driven with force through

relaxed arteries by a powerfully acting heart. Epistaxis, apoplectic effusion, intestinal hemorrhage, rupture of the spleen, may thus be produced. The relaxation of the superficial arteries is only an extension of the condition of the rest of the arterial system, but the increased action of the heart is the reverse. What is its explanation! What cause shall we assign for the central organ of the circulation being in so different a state from all the more peripheral? It is to be remembered that the occurrence of reaction is a step in the direction of recovery, it indicates, as is well known, an effort of the vital powers against the depressing morbific cause. With reference to this, it may be suggested as probable, that the cause of the heart's acting vigorously, while the arterial system still remains relaxed and dilated, may lie in part in the difference of its contractile tissue, which certainly has a stronger and more vigorous life than the non-striated fibre of the arterial coats, and is therefore capable of recovering and resuming its activity sooner than they do. A still more efficient cause of the exaggerated action of the heart may be found, I think, in the elevated temperature of the blood, which acts upon it in the way of a stimulus. Exposure to moist heat, when cooling by evaporation is impossible, accelerates the pulse remarkably. M. James mentions that his own rose from 70 to 120 while he was immersed in an atmosphere charged with hot vapour, the temperature in the lower strata being 111·4°, and in the upper 118·4° Fahr. The same experimenter endured with little inconvenience a temperature of 176° Fahr., when the air was dry. One cannot aver positively that the increased heat of the blood in the former instance caused the rapid movement of the heart, but it is certainly very probable that it was so. It is very intelligible that the heart would not obey the stimulus of the hotter blood, until it began to recover from its primary state of enfeeblement and depression. On this view, we can see in reaction one of those beautiful compensating efforts which are often exhibited by nature in disease. The very agent which weakens and depresses the chief organ of the circulation, sets up a condition in the blood which counteracts the original mischief, or at least greatly tends to do so. In some persons, severe fatigue is followed by very marked pyrexia. This may be well accounted for on the view proposed. The expenditure of nervous force leaves the sympathetic in a semi-paralysed state; hence comes increased heat of blood, and from this again results increased cardiac movement.

The character and degree of reaction (speaking of it for a moment generally) will vary very much according to the nature of the poisonous influence, and the vital endowments of the system. In fevers of a low type, the muscular tissue of the heart may become so impaired in its quality that it answers but languidly to the stimulus of the hot blood. In the ardent inflammatory fever of tropical countries, especially when it affects new comers, the highly irritable contractile fibre responds energetically to the stimulus. Bloodletting is well borne in the latter, is injurious in the former.

Authors mention the occurrence of paroxysms consisting of a cold or a hot stage only. In the former case, it may be considered that the poison has operated chiefly on the cerebro-spinal system; no febrile reaction takes place, because the temperature of the blood has not been increased by paralysis of the sympathetic. In the latter, the poison operates exclusively on the vaso-motor nerves, and therefore pyrexial phenomena alone are produced. That the poison should thus restrict its action in some cases to a certain department of the nervous system cannot be considered improbable, when we think how decidedly this is the case in various neuralgiæ.

Virchow attributes the reactionary excitement of the heart to paralysis of the vagus nerve; but, though this might very possibly increase the rapidity of its action, it would not, I conceive, augment its energy, which is certainly the most important feature of reaction. Moreover, careful experiments on the effects of dividing the vagi (Reid's) do not show any very positive result in accelerating the heart's contractions.

In the third stage, the tissues regain their power generally, secretions are poured out by the glands which have hitherto been inactive, the abnormal heat diminishes as the sympathetic nerves recover their tone, and the action of the heart becomes tranquil gradually.

In the *algide* fevers, the prominent phenomena which we have to explain are

the icy cold of the surface, the elevation of the temperature after death, the smallness or suppression of the pulse, the peculiar cerebral torpor, but without coma or loss of consciousness, and the debility and depression. The same results of hyperæmic afflux and congestion in the cranial and abdominal viscera are found, as in the other forms of ague fever. The skin is not always pale, but sometimes of natural colour, sometimes livid, or covered with livid spots. One may read these cases as the results of a morbid influence, which operates more after an irritating than a paralysing manner. The brain is evidently greatly enfeebled, but rather, it would seem, in the same way as a sensory nerve, when it becomes numbed during an attack of neuralgia, a condition which Romberg denominates anæsthesia dolorosa. This cerebral numbing appears more like the result of a peculiar irritation, than simple loss of power. It is carried to a still greater degree in certain soporose fevers, where it produces absolute coma, which may be relieved by opium. A similar state prevails in the vaso-motor nerves of the limbs and surface; they are irritated and excited, instead of being paralysed, as during pyrexia. It is reasonable to suppose that the icy cold may, at least in part, be the result of this state; as it was found in Bernard's experiments that, when the upper end of the divided sympathetic was galvanised, the temperature fell below the normal figure. The elevation of the temperature after death seems necessarily to imply that some cause was acting during life to depress the heat that should have been normally developed. This cause is probably the irritated state of the vaso-motor nerves. The livid colour of the surface, like the leaden hue of cholera, is to be regarded, I believe, as the result of tissue paralysis; in consequence of which, and of arterial occlusion, stagnation occurs in the capillaries and small veins. A remarkable case recently fell under my notice, in which the nose and hands became cold and of a dull livid red on exposure to the open air, even in the middle of June. The other symptoms were extreme nerve-debility, tremors, and sweats.

It does not appear to me possible to account for such phenomena solely on the ground of arterial contraction. I may quote the following observations from my note-book, in further illustration of this state:—"Frog's web, arteries of the part rather contracted, the blood in numerous capillaries stagnant, filling them up with an uniform red mass; the application of warmth dilates the arteries, and induces free flow in the capillaries." Wharton Jones records similar observations. This condition, which has some analogy to that existing in some algide fevers and in cholera, is widely different from that which is commonly observed as the result of cold operating upon a quite healthy part, which it renders exsanguine and pale. To quote again:—"The effect of warmth and cold upon the circulation is very striking; by cooling the web with cold water, some arteries are brought to be completely contracted and empty, and the transit of red and white globules through the capillaries ceases, so that they appear empty; but as soon as the web is dried and warmed, the artery is found expanded and transmitting a full current, and the capillaries at the same time become filled with red corpuscles." It seems clear that, in these instances, the vital condition of the tissues alone makes all the difference, whether the capillaries are filled with corpuscles or not. If the tissue be quite healthy, the capillaries, during arterial occlusion by cold or other causes, will be traversed only by plasma, and will be empty, or nearly so; if the vital power of the tissue be weakened, the blood congests and fills up the capillaries, but does not adhere to their walls, and the congestion is dissipated by free flow; if the nutrition force be perverted, as in sthenic inflammation, creating local attraction of a morbid kind between the blood and tissue, then stasis occurs, which is not removed, but only aggravated, by dilatation of the arteries and free blood flow. The existence of arterial contraction, amounting sometimes to occlusion, would account for the smallness or obliteration of the pulse, supposing it to extend to the radial and arteries of the same size.

The state of the heart probably varies, being in some cases directly enfeebled, in others enchained or embarrassed in its acting by morbid stimulus. Its movement does not seem to be accelerated into reactionary excitement, or only partially, even during the decline of the paroxysm. This is to be accounted for, partly by the cerebro-spinal system being more affected than the sympathetic, partly by the *depressing* influence being too intense to be overcome by the somewhat heated

blood. It seems reasonable to think that in cases of this kind, on the view that hyper-irritation of the vaso-motor nerves was chiefly concerned in causing peculiar symptoms, the administration of opium with some diffusible stimulus would be beneficial.

In the *comatose* fevers the coma may result from the palsying or enchaining action of the malarious poison telling upon the cerebral hemispheres, in which cases it will occur in the earlier period of the attack, and will be relieved by opium. Or it may proceed from increased flow of blood to the brain, and excessive congestion tending to effusion, when it would occur in the reaction period, and will be relieved by blood-letting, local and general, cold to the head, and quinine.

In *syncopic* fevers (*terciera syncopal* of Pera), the heart is paralysed more or less completely by the malarious influence acting on its nerves, just as a voluntary muscle, or set of muscles, may be. The syncope occurs, as far as I am aware, at the commencement of the cold stage. It may be difficult to distinguish these cases from others approximating more to the algide group, in which there is complete suppression of the pulse; but the heart, so far from being paralysed, is heard on auscultation acting violently, as if striving to overcome some obstacle, which is probably the occluded state of the arteries. The character of the impulse and sounds of the heart will generally enable us to make a diagnosis. The distinction is of great moment; for in the first case stimulants would of course be necessary, in the second sedative measures.

Local palsies of any motor or sensory nerve, or local neuralgiæ or convulsions, may occur, the affected nerves being either irritated or enfeebled.

If *jaundice*, co-existing with free bile flow, or any other *secretion flux*, occur, it indicates that the vaso-motor nerves of the part are palsied, whence comes dilatation of blood-vessels, hyperæmia, and over-activity of the gland tissue.

The formation of a *splenic tumour* results from excessive flow of blood to that part, and increased formation of splenic tissue, *i.e.*, increased nutrition. It is therefore quite analogous to a gland flux. Both occurrences illustrate well the development of increased activity in the affected tissue as the result of paralysis of its vaso-motor nerves.

The common occurrence of *dysentery*, either primarily from exposure to malaria, or a sequel or complication of malarious fever, is evidently a localisation of the morbid action, or it may be a concentration. The vaso-motor nerves of the large intestine are paralysed, and the usual results take place. It is to be mentioned, that the condition of a part, as to vital power, has much to do in determining the occurrence of inflammation after hyperæmia has been set up in the way supposed. If the vital power be tolerably sound, the part may remain unaltered, or may exhibit greater activity, as in the case of the gland flux; but, if the vital power be depressed, severe inflammation may result, *e.g.*, purulent ophthalmia after section of the sympathetic in the neck. Though we can by no means see thoroughly into the matter, yet it does appear that there is a relation between the tissue power, the functional energy of a part, and its blood supply. In the healthy working of the apparatus, the former takes the initiative; and the hyperæmic afflux is subordinate, and ministers to the calls of the tissue in its increased nutrition. In inflammatory disorder, the vital power, which can use the blood for normal purposes, is depressed, and the hyperæmic afflux predominates, issuing in wasteful effusions of corpusculating fluids, mucus, or pus. Nay, it seems highly probable that in conditions of depressed vitality, as in frostbite, the scorbutic dysentery of the Crimea and elsewhere, the existence of hyperæmia, even in moderate amount, acts as a morbid and destructive stimulus to the weakened part.

Having thus endeavoured to view some of the multifold manifestations of malarious disorder in the light of recent neuropathological research, it may be well to consider shortly what bearing those views have on other kinds of fever. It will be sufficient to take for examination two types, to one or other of which all approximate; viz, first, the severe inflammatory fever of tropical countries; second, the ordinary low fever, typhus, or typhoid, of our own. The phenomena of the first are, as described by Dr. Copland, slight chills only at the onset, subsequently "strong, full, hard, accelerated pulse," great heat, headache, and some-

times violent delirium, or maniacal excitement. Free venesection (to three or six pounds) is necessary. If in such fevers, on the above view, we admit the pyrexial condition to depend essentially on paralysis of the sympathetic, still it seems absolutely necessary to assume that the other tissues are in a state differing greatly from that which they manifest in many malarious, and all low fevers. The poison which has paralysed the sympathetic, has in no degree weakened the heart or the other organs. Hence the heated blood, acting on structures vigorous and prompt to respond to the stimulus, excites reactionary phenomena of great violence. It is the task of the physician to moderate these, as, if allowed to run their course unchecked, they induce a period of dangerous or fatal exhaustion.

How very apposite to this is all that we observe in the second type—the low fevers! Here every part alike bears the stamp of depression and debility. The sympathetic system is palsied, and hence the febrile heat, and the proneness to hyperæmia in various parts. The heart is enfeebled, and often needs stimulus to keep its action from failing; its very fibre often tends to soften and degenerate. The brain is enfeebled, and hence the low delirious wandering or the sopor. The voluntary muscles declare their atony by the down sunk posture of the patient.

The lesson of this seems to be, that while we incline, as we may reasonably do, towards the theory of the nerve origin of pyrexial phenomena, we must not lose sight of the fact that the other corporeal systems are also affected to a greater or less degree by the fever poison, and that the event of the disease may in great measure depend on the amount of vital resistance and energy which they retain. In malarious fevers the nervous system (cerebro-spinal and sympathetic) is certainly far more affected than the others. In low fevers all the systems alike seem to be paralysed and depressed. In sthenic fevers no system, except the sympathetic, seems to have suffered depression, but, perhaps, to be rather in a state of abnormal irritability. Thus one physician may choose for his motto, "He fed fevers;" another, "He toned or soothed fevers;" a third, "He bled fevers;" each according to the kind he had most to deal with.—*British Medical Journal*, *Oct.* 10, 1857, *p.* 843.

2.—ON THE FORMS OF REMITTENT FEVER PREVALENT IN THE METROPOLIS.

By Dr. Thomas B. Peacock, Assistant Physician to St. Thomas's Hospital, and Physician to the City of London Hospital for Diseases of the Chest.

As to the diagnosis of this affection, 1. typhus fever is often distinctly traceable to contagion, or may be inferred to have so originated. It usually commences with symptoms which are sufficiently characteristic, but not very severe. An eruption makes its appearance on the skin from the fourth to the seventh day, follows a tolerably regular course, and disappears from the twelfth to the twentieth day. The fever advances with the progress of the eruption, relaxes as it fades, and convalescence usually follows its disappearance in a few days. The predominant symptoms throughout the course of the disease are those of prostration of power, and oppression of the nervous system, and the condition of the patient does not very materially change from day to day, or at different periods of the day. When death ensues, it is usually the result of exhaustion, or of inflammation of the cerebral or pulmonary organs; and where convalescence occurs, it advances very gradually, and the attack is not liable to be prolonged by relapses.

In all these respects typhus fever differs from remittent:—the accession of remittent fever is usually more violent, and the progress more rapid. There is no eruption on the skin, except towards the later periods, when purpurous spots may occur, or after the exacerbations, when miliary eruptions or sudamina occasionally appear. Except during the exacerbations and for a short period, the skin is not dry, the tongue not dry and brown, the pulse is not very quick, and the mind remains clear. The prostration of strength is less persistent, and there is little tendency to sloughing or excoriation of the dependent parts. There are marked changes in the condition of the patient at different periods of the day, or on different days, and a peculiar aspect very different from that of a patient labouring under *typhus. There is greater* tendency to hemorrhages from the mucous membrane,

rheumatic symptoms, vomiting, jaundice, and diarrhœa; and lastly, while the relaxation of the fever ensues rapidly, and apparent recovery takes place at an early period, there are often one or more relapses, by which the duration of the attack is prolonged.

2. From typhoid the distinction of the remittent fevers is, at first sight, less obvious. The two diseases bear, indeed, considerable resemblance in the tendency to hemorrhage from the mucous membranes, in the frequency of diarrhœa and jaundice, and in the occurrence of relapses with profuse perspirations; but, when more closely viewed, they present very distinctive features.

The mode of accession in typhoid is generally gradual, the patients being usually indisposed for some time before the appearance of serious symptoms: diarrhœa is generally present in a more or less marked degree from an early period, and continues throughout the attacks; the tongue is usually dryish, or dry, with a brown coating above, and morbidly red towards the tip and edges; the pulse is quick; there is much torpor and oppression of mind, and gradually advancing and long-continued prostration of strength. An eruption of a peculiar form is usually observed on the skin at some period of the disease. The patient does not present marked changes at different times of the day or on different days. The attack is often very prolonged, and convalescence is very gradual. Remittent fever, on the contrary, attacks suddenly, is rapid in its progress, displays frequent exacerbations and remissions; and is unattended by any eruption on the skin. The eruption in typhoid is less constant than in typhus; it yet appears in a sufficiently large proportion of cases to make it of diagnostic value. Thus, it was present in all but 16 out of 66 cases under my own care, the notes of which I have analysed. Its entire absence, therefore, in remittent fever is a marked distinction between the two affections. Sudamina are, probably, about equally common in the two forms of fever. I have noticed them as having appeared in 22 out of 52 cases of typhoid, and in 4 out of 9 cases of remittent fever. These states possess, however, in neither affection any material diagnostic importance. They are found in other forms of febrile disease, in which, after a dry state of the skin, there is a tendency to perspiration; they are more common in hot weather, and when the patient is too warmly clad and covered, than under other circumstances; and they appear to depend upon the obstruction of the ducts of the sudoriferous glands by dry cuticle. The ordinary purpurous spots, which are comparatively rare in typhoid, are not uncommon in remittent fever.

In the frequency of relapses typhoid and remittent fevers are closely assimilated, while both differ in the same respect from typhus. Taking a series of years together, I find that relapses of greater or less severity are reported to have occurred in 1 in every 6 of the severe cases of typhoid, or in 6 out of 35 cases which I have treated at St. Thomas's during the last three or four years. Their frequency varies greatly at different periods and seasons. Thus, they are most frequent during the early autumn, and they were especially common in that season of the year 1855; they also will probably be found to vary in frequency in different localities. The tendency to relapse in typhoid is, however, I conceive, an accidental complication, dependent, amongst other causes, on the influence of malaria to which the patients may have been exposed, as well as to the poison of typhoid; in the same way as rheumatic or neuralgic affections may assume an intermittent or remittent character from the same cause, or as cholera may supervene during the progress of typhoid. In remittent fever, on the contrary, the exacerbations and remissions are essential features of the disease. It is noticed by Dr. Grant, as a distinction between the continued fevers having a more or less remittent type and the remittent fevers, that the remissions in the former take place about eight o'clock in the morning, and continue until about three in the afternoon; whereas, in the true remitting fevers, the remissions and exacerbations occur at irregular periods, and sometimes twice or oftener during the day. The aspect of a patient labouring under typhoid is also different from that of a person suffering from remittent fever, though this distinction is less marked than between both these forms of fever and typhus.

3. Remittent fever and relaxing fever are still more closely assimilated. Were I, indeed, to form an opinion, from the few cases of relapsing fever which I have seen in London, I should certainly doubt their specific distinctness. The two

diseases so closely correspond, that in looking over reports of cases treated some time ago, it becomes extremely difficult to decide to which form they are to be assigned. In the epidemic of relapsing fever, as it prevailed when I saw it in Scotland in 1843, and as it has been described by various observers, the disease seemed, however, to depend upon a specific cause, different from those to which typhus, typhoid, or the ordinary remittent and intermittent fevers owe their origin. Thus, it frequently attacked various members of families in succession, and it infected the medical attendants, nurses, and other officers in the hospitals. It also prevailed epidemically in districts remarkably free from malarious influence. Thus Edinburgh occupies a situation peculiarly free from the sources of malaria. The surface is rocky, consisting of limestone, sandstone, and trap; the soil is shallow; the site is freely exposed to various winds, especially to those blowing from the sea; the fall of rain is small, and there is but little foliage. We also find that remittent and intermittent fevers are at the present time almost unknown there. Thus from the statistical report of the cases treated at the Royal Infirmary from October 1841 to the same date of the following year, it appears that only two cases of ague occurred out of a total of 3530 cases treated, and both of them, if my memory does not deceive me, were in strangers. In the remainder of 1842 and the first six months of 1843, three patients were treated for ague out of 2840 cases, and of these one only resided in Edinburgh or Leith. Thus of 6370 patients, five only had ague, and probably only one of these contracted the disease in or near Edinburgh. During the succeeding 15 months, which embraced the period of prevalence of relapsing fever, three cases of ague only were treated out of 7204 cases. So that Edinburgh, though the relapsing fever there assumed its most characteristic form and prevailed most extensively, is a situation in which it would have been the least likely to appear did the disease depend only on a modification of the ordinary causes of intermittent and remittent fevers. We may therefore infer that the two forms of fever are specifically distinct. The cases of relapsing fever bear, however, a very close resemblance to some of the forms of remittent fever, and it is not easy to point out their distinguishing features. Both are characterized by their sudden accession, short course, rapid convalescence, and tendency to relapse and to be complicated with rheumatism, jaundice, and hemorrhages. The primary attack of relapsing fever is, however, of a more continuous character, and does not present the frequent exacerbations and remissions which occur in remittent; and the relapses occur at more distant intervals, are of longer duration and less frequent. There is also a very close resemblance between the short febrile attacks to which the terms ephemera, febricula, and diary fever have been given by systematic writers, and short paroxysms of intermittent or remittent fever. The cases of febricula do not, however, appear to possess any specific character, but rather consist of imperfectly developed attacks of other forms of fever, and they probably not unfrequently owe their origin to the influence of malaria.

The *treatment* pursued in this form of disease varied with the peculiar character of the individual cases. If the patients, when they first came under treatment, presented symptoms of active febrile disturbance, febrifuge medicines were prescribed—nitrate of potash, the acetate of ammonia, &c., with, in some instances, small doses of the potassio-tartrate of antimony. In some cases perspiration was encouraged by packing the patient in a blanket wrung out of hot water. As the active symptoms gave place to depression of strength, or where the active febrile stage had subsided before the patient was seen, the chlorate of potash, generally with the muriatic acid, was given; and when the prostration was still greater, bark, ammonia, wine, brandy, &c., were exhibited. When the periodic character of the disease became more apparent, quinine and bark were had recourse to in fuller doses; and when the nature of the disease was from the first apparent, these remedies were immediately employed. When there were evidences of active cerebral disease, or of pneumonia, or bronchitis, leeches, cupping, or counter irritants, and in the latter cases, antimony, were used. The hepatic symptoms were treated by hydrarg. c. cretâ or calomel in combination with opium or Dover's powder; the rheumatic pains, &c., by colchicum. Diarrhœa, dysentery, discharges of blood from the mucous membrane, and profuse sweating, were *arrested by* the employment of astringents—gallic, tannic, or sulphuric acids,

acetate of lead, &c., with opium. Anodynes, opium, and morphia were exhibited to calm delirium and procure rest.

As a general rule, depletion or any depressing means was very ill borne, and, if pursued at the outset of the attacks, liberal support and stimulants were soon very freely required. The remedy upon which we chiefly rely in relieving all diseases of a periodic character—bark and its alkaloid quinine—were employed, to a greater or less extent, in all the cases. The quinine was generally given in conjunction with the decoction or tincture of bark, or both, and in doses varying from 2 to 6 grains, repeated three or four times a-day. In the mild and uncomplicated cases this treatment was generally soon successful, the paroxysms becoming slighter, and occurring less frequently, but in other instances the treatment was less efficacious.

In one case the quinine failed entirely to prevent or to defer the occurrence of the relapses, or to lessen their severity, though the patient had at one period taken it for six days continuously, and for the last two days to the extent of 12 grains daily, together with a considerable quantity of tincture of bark, and was then fully under the influence of the drug, as indicated by the peculiar nervous symptoms.

At another period of his illness, the same patient took 8, 6, and 15 grains of quinine, together with tincture and decoction of bark on three successive days, without any satisfactory results,—a paroxysm of great severity occurring on the third day. Subsequently the attacks were both deferred and rendered less severe by the use of smaller doses, very frequently repeated. The case ultimately, however, proved fatal. I have not tried in any of the cases of remittent fever which I have treated, the use of the larger and frequently repeated doses of quinine, as recommended by Dr. Dundas. This treatment has been found useful in the endemic remittent fevers of hot climates, and would probably be beneficial in those which occur in this country; but, from the depression which is apt to follow the use of quinine in such doses, and the unpleasant nervous symptoms which it occasionally excites, its employment would require great care. In the case to which I have above referred, the use of quinine was certainly carried to the fullest extent compatible with safety, yet it failed to accomplish the desired effect. In the simple cases of remittent fever, moderate doses of quinine are sufficient; and in the severer and more complicated cases, the excessive depression of strength which follows the occurrence of exacerbations and relapses, the great irritability of the stomach which often attends them, and the shortness of the interval, make it very difficult to get the required remedies taken, and would render great caution necessary in the use of large doses of quinine.—*Medical Times and Gazette, May* 9, 1857, *p.* 455.

3.—ON HÆMATURIA AFTER SCARLET FEVER.

By Dr. William R. Basham, Physician to the Westminster Hospital.

[In those cases where we have convulsions, coma, and death, there is no hesitation in attributing the symptoms to uræmic poisoning, any more than if the mischief were limited to renal disturbance. The congestion of the kidneys, the hematuria, which form the incipient stage of the disorder leading to this uræmia, arise undeniably from the imperfect elimination of the original virus.]

If I may sum up in a few words the broad fundamental, therapeutical principle in such cases, I would say, we must endeavour to bring into activity and act upon those functions and emunctories which are not, or only in a moderate degree, implicated in the morbid disturbance, and by their agency relieve, if possible, the oppressed and impeded organs. Thus, though the surface of the body is anasarcous, we must endeavour to promote its exhaling power; and as the intestinal mucous surface gives no indication of sharing in the morbid state of the kidneys, we must bring its secretions into activity to purge the system of the accumulated fluid, and vicariously, for a time, relieve the kidneys of their office. The intimate sympathy between the kidneys and skin, and between the latter and the bronchial mucous membrane, when the latter is the seat of inflammation, would entitle us to expect the most beneficial results by vigorously promoting the cutaneous function; but unhappily, in these cases, the dropsical state of the surface of the skin precludes our obtaining much efficient aid in this direction. Warm baths effect often-

times great temporary relief to the lungs; the breathing becomes less oppressed, and the secretion from the bronchial tubes more free; but the hot-air bath appears to be the most efficacious; there is not that exhaustion which is induced by a succession of warm baths, and, to my observation, the amount of relief felt by the patient is greater. To aid these external appliances, ammoniacal salines may be given internally with advantage. Active purging, however, yields the best results. It is, however, of importance to select appropriate means to obtain the greatest amount of relief, for it is not every purgative of the Pharmacopœia which answers this purpose equally well. That purgative which acts most directly as a hydragogue is the best adapted, but which, at the same time, is not followed by any disproportioned exhaustion, or by any torpid reaction. The combination of jalap and cream-of-tartar is most admirably suited to these ends. It acts quickly, without depressing the system, is not followed by inactivity, and induces copious watery dejections. The patient was much benefited by these purgative remedies; the febrile state was lessened, the tongue became moist, and doubtless, from the amount of fluid drawn away by the cathartic, may be explained the great increase in the specific gravity of the urine. There was manifest abatement of the dropsical condition, and the breathing was easier and expectoration more copious. Continuing this plan of treatment, the improvement became sufficiently pronounced to justify the administration of chalybeates. At the same time, the state of the urine, revealed by the microscope, together with the appearance of that peculiar pigmentary condition observed in combination with the albumen, suggested a very unfavourable prognosis, although I was not without hope that the renal degeneration had not reached that stage at which ultimate, though remote, recovery might be possible. The casts of the tubes were partly transparent, partly granular. The few epithelial corpuscles visible within the tubes were filled with fat granules, and the tubes contained many scattered fat granules; highly refractive, and completely removed by ether. These microscopic conditions indicate an advancing stage of degeneration, and if spread through both kidneys, must be quickly followed by an imperfect elimination of the chief urinary constituents; and this was evident by the singularly watery state of the urine, its specific gravity not exceeding 1·005, but containing abundance of albumen, and this latter, associated with a peculiar pigmentary matter, rendered visible after boiling by the addition of nitric acid.

It would be out of place here to enter into an investigation of the nature of the pigments that are occasionally met with in the urine, cyanurin, melanurin, &c. Experience tells me that the development of this pigmentary condition, in combination with albumen in the urine, is of the greatest import. It is always associated with the most advanced stage of renal degeneration, and in every instance in which I have seen it, it has been quickly followed by fatal results. Lehman, in his "Physiological Chemistry," (vol. ii., p. 428,) says, as far as his experience goes, it is only when uræmic symptoms have manifested themselves, that this peculiarity of the urine is generally observable, and this entirely coincides with my own. We should not then be unprepared for the development of unfavourable symptoms whenever this peculiarity of the urine is observed; so that notwithstanding the apparent improvement in the child's condition, even to the diminution of the dropsy of the surface, I expressed my fears at the time that this hopeful state would be but temporary. And surely nothing can exhibit the value and importance of frequent examinations of the urine in such cases more forcibly than the fact here obtained, and the unfavourable inference deduced. In all other respects there was an apparent amendment, and if we had based the prognosis only on the general aspect of the patient, we might fairly have inferred that all was going on well. It is not of less importance in hospital practice than in private, nor is it less necessary amongst the poor than amongst the rich, to be explicit and candid in the expression of our fears or hopes to those anxiously interested in the welfare of the patient. It is as much the office of the physician to allay anxiety where that can be done with prudence, as it is his more distressing, but not less imperative duty to disclose his worst apprehensions, especially when he sees expectations of amendment cherished, which experience teaches him will be but temporary, and which must soon give way to less equivocal signs of approaching danger.

In the present instance, I believe the warning given to the mother was unheeded, *the amendment* was so palpable to her, that she would not believe but that our

unfavourable opinion was mere conjecture. You may learn an important point here—namely, the suddenness and abruptness with which the symptoms of uræmic poisoning oftentimes commence. In some cases, particularly in adults, the indications are progressive; but here all other things being promising, convulsions suddenly supervene; they intermit, but coma characterizes their remission, and the patient dies forty hours after the first indication of the urinous poison acting on the nervous centre. You may very properly ask,—can nothing be done in this crisis?—Are there no remedies available for such a state? These cases of convulsions are not always fatal; sometimes in the intervals consciousness returns. Such cases offer a better prospect for remedial agents than where the patient remains comatose. In either state, however, an effort should be made to excite the bowels to active excretion. Enemata containing according to the age of the patient, half a drop, or a drop, of croton oil, should be administered, and where the ability to swallow is unimpaired, you may expect some benefit from the chlorine mixture, the agency of which, according to the hypothesis of Frerichs, depends on its union with the carbonate of ammonia, into which the urea in the blood is converted, and which he considers to be the poisonous agent in these cases of fatal uræmia. I have in vain sought for proofs of this doctrine, but whether the hypothesis be true or false, clinical experience tells me that much benefit is often derived from chlorine administered in the form constantly employed by me.—*Lancet, June* 20, 1857, *p.* 623.

4.—*Nitro-Muriatic Acid in the Gastric Fever of Children.*—A remedy, which is a favourite one with Dr. Arthur Farre, in his outpatients' room at King's College Hospital, in the treatment of gastric fever in young children, is the nitro-muriatic acid. To a child of a year and a half to four years old, a mixture containing a drachm each of the diluted nitric and hydrochloric acids, to six ounces of water, is ordered, in doses of half an ounce, three times daily. At the same time a dose of grey powder (four grains) is given every night at bed-time. If the disease be passing off, and tonics needed, the grey powder may be omitted, and the acids given in infusion of quassia, or with bark. The peculiar tongue of infantile gastric fever is well-known, resembling closely that of scarlet fever in the prominence of its papillæ, but differing from it in having a white, instead of a red ground. Thus the papillæ present in the midst of a whitish fur; but in some cases the centre of the tongue is red and beef-like, the sides only being furred.—*Medical Times and Gazette, May* 16, 1857, *p.* 489.

5.—ON ACUTE RHEUMATISM.

By Dr. W. S. Okr, Senior Physician of the Royal South Hants Infirmary.

That acute rheumatism is a true inflammatory disease cannot reasonably be doubted. The character of the pulse and tongue; the condition of the urine, loaded with lithates and purpurates; and the appearance of the blood drawn from the system, all go to prove that it is so; and, if further proof were necessary, it is to be found in the fibrinous and sometimes suppurative results of the rheumatic action. The former is clearly shown in pericarditis; the latter in abscesses occasionally formed near the affected joints, some cases of which I have myself seen in the Royal South Hants Infirmary.

Acute rheumatism, when confined to the joints, generally terminates in recovery; but, when it attacks the heart or any other internal organs, the prognosis is unfavourable.

The diagnosis is by no means difficult; its febrile and inflammatory character will distinguish it from neuralgia and syphilitic periostitis. The selection of the larger joints; the profuse perspirations; the deep bilious tinge of the urine, in addition to the lithates; the greater degree of pyrexia; and the comparative failure of colchicum to relieve the pain and speedily terminate the attack,—will suffice to distinguish it from gout. In the treatment of this malady, and indeed of all others, the curative efforts of the constitution are to be kept constantly in view;

and two of a very decided character may be generally observed in acute rheumatism. The one is to evacuate by the kidneys a large quantity of bile and of lithic compounds; the other is to eliminate profuse perspirations from the whole surface of the body. It has been supposed by some that, as the excessive sweats do not appear to afford any relief, but rather to exhaust the powers of the constitution, they ought to be restrained. This is an opinion which I cannot endorse, as it is contrary to common sense, and even dangerous to life; for, in all probability, acute rheumatism would prove fatal in a large majority of cases but for this timely outlet from the skin.

The indications of cure in acute rheumatism are to subdue the febrile inflammatory action, and to correct the condition of the blood: and these indications will be fulfilled by blood-letting, by such means as will keep free the renal, hepatic, and cutaneous outlets, and at the same time allay the sufferings of the patient.

There is, perhaps, no disease which has been, and continues to be, treated with so many different remedies as acute rheumatism. These, for the most part, I shall pass by, as the main object of this paper is to give the result of my own experience, rather than that of others; and I believe myself to be justified in saying that this disease, when treated from the beginning and under favourable circumstances, may be speedily cured by the direct efficacy of medicine.

At the onset, unless there be any valid reason to the contrary, it will be right to take from the system from twelve to fifteen ounces of blood, the clot of which, after standing awhile, will be found remarkably firm, with a buff-coloured concave surface of tough coagulated fibrine. But this appearance will not justify a repetition of the bleeding unless any symptoms shall arise that may require it. Half an ounce or more of castor oil is then to be given, which may be repeated every other morning, or from time to time so long as the urine exhibits a bilious character. Immediately after the purgative has ceased to operate, the following medicine is to be commenced:—

℞. Hydrargyri chloridi, aloes extracti aquosi, aa gr. vj; pulveris opii, extracti colchici acetosi, antimonii potassio-tartrat, aa gr. iij; confectionis rosæ q. s. M. Divide massam in pilulas duodecim, quarum sumatur una 4ta quaque hora cum haustu infra prescripto.

℞. Potassæ bicarbonatis ℈j; acidi citrici gr. xv; liquoris potassæ ♏x; potassæ nitratis gr. x; syrupi ℥j; aquæ puræ ℥iss. M. Fiat haustus.

In about twenty-four hours, or less, the pains will be relieved. In five or six days the joints will be set at liberty, and in twelve or fourteen the swellings will have subsided, and the febrile symptoms be subdued. Then, if the tongue be clear and the pulse below 70 in the minute, an alterative alkaline tonic may be given, to strengthen the general health, and prevent a return of the disease.

℞. Potassii iodidi gr. xxiv; liquoris potassæ ℥iss; ammoniæ sesquicarbon. ℈j; syrupi zingiberis ℥ss; aquæ menthæ piper. ℥vj. Fiat mistura, cujus sumatur ℥j ter die.

At the same time, it will be necessary to continue a gentle aperient twice or thrice a week.

℞. Pilulæ hydrargyri gr. xij; ammonii potassio-tartratis gr. iss; extracti aloes aquosi gr. xx. Misce bene, et divide in pilulas vj, quarum capiat unam pro dosi.

This is the treatment which I have almost always adopted for acute rheumatism, in the Royal South Hants Infirmary and elsewhere; and, with very few exceptions, it has been crowned with complete success.

If, either from advanced age, a morbid condition of the gums, or any other cause, the use of mercury should be deemed inadmissible, one of the following medicines may be substituted;—

℞. Antimonii potassio-tartratis, extracti colchici acetici, pulveris opii, pulveris digitalis, aa gr. iij; extracti aloes aquosi gr. xij; syrupi q. s., ad massam formandam. Divide in pilulas xij, quarum capiat unam 4ta quaque hora.

Or the following:—

℞. Vini colchici ℥ss; potassæ bicarbonatis ℥iss; potassæ nitratis ℥j; syrupi zingiberis ℥iij; misturæ camphoræ ℥vj. Misce. Capiat æger cochlearia *magna duo ter die*, et, dolore artuum urgente, cum hac pilula.

℞. Pulveris ipecacuanhæ compositi gr. v; syrupi q. s. M. Fiat pilula. Sumatur etiam olei ricini ʒ ss, secundo vel tertio quoque mane.

These means will be found adequate to relieve the pains of the joints, and sometimes speedily subdue the disease; but these are not, in my judgment, so well calculated to protect the internal organs from rheumatic inflammation as the former treatment combined with calomel.

From the very onset of acute rheumatism, more especially in young persons, the action of the heart is to be daily watched by auscultation. Indeed, it may be truly asserted that, in this case, the stethoscope is as needful to the medical man as the lead is to the mariner; for, as soon as any abnormal sound of the heart's action is detected—nay, if there be pain only of the cardiac region, accompanied by *fast breathing* and *acceleration* of the pulse—he is warned of approaching danger, and imperatively called upon to advance in the scale of treatment. Blood should be taken from the arm, leeches and blisters applied to the seat of pain, and the system brought under mercurial action as speedily as possible.

℞. Pilulæ hydrargyri gr. xxxvj; antimonii potassio-tartratis gr. iss; extracti digitalis, pulv. opii, aa gr. i. Misce bene, et divide in pilulas vj, quarum capiat unam 4ta quaque hora.

The protoxide of mercury is preferred to calomel, as being more speedy in affecting the system.

Should the gums become soon ptyalised, the fibrinous textures of the heart and pericardium will probably be rescued from the attack; but if the mercury fail to affect the system, and a bellows-sound remain after the arthritic symptoms have subsided, the fibrinous vegetations upon the valves will probably have become organised, and more or less interrupt the free current of blood though the valvular apparatus for years afterwards. Or, on the other hand, if the rubbing sound, which had been detected close under the parietes of the cardiac region, should cease, leaving a laborious action of the heart, a rapid and irregular pulse and embarrassed breathing upon the least exertion, an adherent pericardium may be diagnosed, beyond the reach of human skill; and a sudden termination of life prognosticated.—*British Medical Journal*, *May* 23, 1857, *p.* 428.

6.—*Acute Rheumatic Fever.*—The idea that acute rheumatic fever arose from the presence of lactic acid in superabundance in the system, and that the symptoms could be accounted for from this cause, was first propounded by Dr. Prout. Since, Dr. Todd, Dr. Fuller, Mr. Spencer Wells, and other writers have supported this view. Dr. Richardson has just made some very important experiments to try whether it admitted of any direct demonstration. On July 8th, he injected into the peritoneum of a healthy cat 7 drachms of solution of lactic acid, with 2 ounces of distilled water. The operation was performed without accident. The opening in the peritoneum was made valvular, only sufficiently large to introduce a small injecting tube. Two hours after the operation the action of the heart became irregular. The animal was left for the night about six hours after the operation, and in the morning was found dead. The inspection showed no peritoneal mischief, but the most marked endocarditis of the left cavities of the heart. The mitral, thickened and inflamed, was coated on its free borders with firm fibrinous deposit. The whole endocardial surface of the ventricle was intensely vascular. On Monday last, Dr. Richardson repeated this experiment on a healthy dog. On the 14th the dog was living, and was seen and examined by Dr. Snow, Dr. Rogers, Mr. Spencer Wells, Dr. Webb, Dr. G. Hewitt, Dr. Snow Beck, and others, and the experiment of injection was repeated on a second dog. The first dog died on Wednesday, and the inspection revealed the most striking pathological signs of endocarditis. The tricuspid valve was inflamed and swollen to twice its ordinary size. The aortic valve, swollen and inflamed, was coated on its free border with fibrinous beads. The endocardial surface was generally red from vascularity. The pericardium was dry and injected. As before, the peritoneum escaped injury. The joints were not affected, but there was distinct sclerotitis in the left eye. The other dog remains under observation. These experiments demonstrate that endocarditis may be physiologically produced by lactic acid. Dr. Richardson has a

further list of experiments on hand, in which he carries on the inquiry as to the influence of the acetic, the citric, and the uric acids, when introduced into the system in a similar manner.—*Med. Times and Gazette, July* 18, 1857, *p.* 68.

7.—*Treatment of Acute Rheumatism.*—We believe we may safely write it, that the opinions of London physicians are rapidly coming into general concurrence in the rule, that the treatment of acute rheumatism should be by one or other of the salts of potash. Dr. Barlow remarked the other day to his class, that he had lately been trying the bicarbonate, so strongly recommended by Dr. Fuller, but that he found it, as a rule, less efficient than the acetate, his former favourite. He felt no doubt, however, that both were useful. Especially in the most acute class did he prefer the acetate and nitrate to the bicarbonate. Very probably there may be varieties of the rheumatic diathesis, in which one or the other salt is more useful than its congener, the base, potash, being the ingredient essential to all. A combination which we have ourselves got into the habit of prescribing, is of the nitrate eight grains, of the bitartrate fifteen grains, and of the acetate a scruple, given well diluted, in a single dose every four hours.—*Med. Times and Gazette, Aug.* 29, 1857, *p.* 220.

8.—ON THE VALUE OF LEMON-JUICE AND ACETATE OF POTASH IN THE TREATMENT OF ACUTE RHEUMATISM AND GOUT.

By Dr. William Moore, M.R.I.A., Lecturer on Materia Medica in the Dublin School of Medicine.

[In all cases of acute rheumatism where we conclude that the portal system is congested, the following treatment should be adopted.]

Exhibit a brisk mercurial alterative and purgative, blue pill, or calomel, with compound rhubarb pill, and dried soda. This treatment may be indicated at intervals during the course of the disease, more particularly during an attack of acute gout. When the bowels have been freely acted on, I prescribe the lemon-juice, in the proportion of a tea-spoonful, or dessert spoonful, according to the age and calibre of the patient, every second hour, for the first forty-eight hours, and if its sedative effects manifest themselves so early, I continue the same treatment; should there be no change observable, I increase the dose in the case of an adult, to half an ounce every third hour, with lemonade *ad libitum*. In cases where this plan of treatment seems to act specifically, amongst its other good qualities, it tends to keep the bowels, as well as the other emunctories, free, and thereby lessens a source of annoyance both to the patient and practitioner, which other forms of treatment tend rather to aggravate. Occasionally, we meet with cases in which the sedative effects of lemon-juice are well exemplified during the night also, but as a rule, I should be inclined to give from fifteen to thirty minims, according to the age of the patient, of the solution of muriate of morphia, same strength as laudanum, at bed-time.

The acetate of potash is deserving of great attention in the treatment of acute rheumatism, either *per se* or combined with lemon-juice; largely diluted, it is a decided diuretic and laxative. I have prescribed it in many cases of rheumatism, generally in combination with lemon-juice, and with good effect. Dr. Sandwith, of the Hull Infirmary, recently treated ten cases of rheumatic fever with acetate of potash, and with unusual success. He thinks its superiority consists in the rapidity of its action as a febrifuge, which is probably owing to its power in carrying off from the blood the specific poison which has excited the febrile commotion. He premised a suitable cholagogue of calomel, followed by a rhubarb or senna draught, when he suspected portal congestion, as shown by arrest of the biliary and urinary secretions; after this he employed acetate potash 3 i. to 3 ii., dissolved in half a pint of water, with the addition of a little lemon-juice and syrup, to be drunk during the day. Under this plan of treatment, three cases were cured in seven days, one in ten days, one in thirteen days, one in fourteen days, one in fifteen days, two in seventeen days, one in twenty days. He goes

on to state that in the above cases there was no endocarditis, so that we may hope that a further trial of this remedy will show its power in resisting this fearful complication. Dr. S. employed the acetate of potash in chronic rheumatism, with marked advantage. I recently read, with great satisfaction, Dr. Garrod's cases, treated with bicarb. potassæ, in doses of ʒi. to ʒi., every second or third hour: but I regret to say, I have not had an opportunity of trying this treatment; at the same time I have been assured that it has not proved equally successful in the hands of some of our most eminent physicians here.

As regards the local treatment in these cases, leeches to the inflamed part are seldom required; I prefer the more soothing applications, as raw cotton, or anodyne fomentations. In gout, spirit of wine has been much lauded, as also alkaline poultices; but I think, in the majority of cases, the application of a weak tepid solution of spirit and water (1 part to 4) will be most grateful to our patients.—*Dublin Hospital Gazette, July* 1, 1857, *p.* 196.

9.—*Gutta Percha Paper in Rheumatism and Gout.*—Dr. Wetzler, of Aix-la-Chapelle, has given this erroneous name to a substance sold in Paris as "tissu électro-végétal," and which he finds to be nothing but plates of gutta percha as thin as paper. These, applied to parts suffering from chronic rheumatism or gout, have in his hands been found exceedingly beneficial, inducing great local transpiration. They are so thin as to cause no inconvenience, beyond their fragility, when applied over joints that are moved. He has also employed them early in cases of gonorrhœal rheumatism. Slight irritation of the skin is sometimes induced, but this is temporary.—*Froriep's Notizen.—Med. Times and Gazette, May* 16, 1857, *p.* 493.

10.—ON THE CONSTITUTIONAL TREATMENT OF CANCER.

By F. A. Bulley, Esq. (Reported by Dr. McIntyre.)

Mr. Bulley, in a paper read to the Pathological Society of Reading, commenced by stating that he considered the cachectic diathesis which invariably accompanies the formation of cancerous disease, and which, according to some eminent authorities, equally invariably precedes its external manifestation—to depend upon a peculiar broken-down condition of the blood-corpuscles, by which they are rendered, through a disturbed nutrition of parts, capable of passing out of the limits of the circulation through the efferent nutrient vessels not naturally destined for their passage, and that they thus formed the morbid products characteristic of scirrhus; that thus having passed out of the limits of the circulation, the particles so deposited became decolorated, and, being out of the reach of the absorbent system, could not be removed by any means, except by caustic and the knife; that it was of no use to attempt a cure of the disease by either of these means, unless at the same time treatment was adopted to alter the condition of the broken down diffluent blood by restoring its globularity and firmness; by which only, according to the theory he maintains, the continuance or reproduction of the disease could be prevented. He stated, that he had made numerous microscopical observations of the blood of cancerous patients, and had invariably found the changes described. He had also observed microscopically the effects of recent vegetable infusions in restoring the globularity and firmness of the blood; observing daily the changes produced by their use in improving the local disease, as evidenced by the production of healthy granulations on heretofore unhealthy ulcerating cancerous surfaces. He stated also, that the use of such remedies was not new, but that heretofore they had been given with uncertain purpose; and that he had no doubt that the beneficial effects (which he says are undoubted) of cicuta, the galium aparine, and a variety of other remedies of that class, owed their power to the influence they exerted in thus altering the condition of the blood. He stated that the dyscratic condition of the blood was in some measure owing to the interrupted respiratory functions of the skin occasioning a defective oxygenisation of the blood, the lungs being alone insufficient for that purpose; that this was seen in most of the cases

of cancer he had witnessed: but most so in chimney-sweeper's cancer, where the excretory orifices were invariably found to be blocked up by little particles of highly carbonised soot; in other cases, the material blocking up the orifices being the dried natural secretions. He proposed to remedy this condition by the use of regular and methodical frictions and ablutions. He mentioned a caustic application which he had frequently used successfully for the destruction of small morbid growths, viz., savine powder, and the anhydrous sulphate of zinc, to which he would now add a little chloroform, or a small quantity of morphine. He thus stated, as suggested by Dr. Simpson of Edinburgh, that he considered a scirrhous formation to be an actual hemorrhage, and endeavoured to found upon such hypothesis a pathological distinction betwixt malignant and non-malignant growths; that in the former case the blood had passed out of the vessels: in the latter, they were simply impacted by some of the elements of the blood; thus in scrofulous tumours by its white particles, which were usually in excess in such cases; in fibrous deposits by its fibrous elements; the same of fatty tumours, &c.; and that each and all of these latter were capable of removal through the influence of stimulating local applications, and the effects of pressure or improved heart's action, —none of which were or could be beneficial in cancerous cases, because the blood had passed out of the circulatory channels. He drew a comparison betwixt the action of the knife and caustics in the removal for a time of cancerous disease, each acting by causing the vessels on the proximal side of the disease to be plugged up until new vessels, through which the dyscratic element could be poured, had again been formed, and thereby showed the uselessness of local treatment, unless the existing dyscrasia could be removed. He stated, that it was difficult to say from what this dyscrasia originated, but he believed it to be from a deficiency of albumen in the blood; and this might arise from deficiency of food, defective formation, or waste through the secreting organs—as the kidney. This last he has often found, and believes it to be one of the most frequent causes of the pre-existent and concomitant cachexia that, he says, invariably attends upon cancerous formations. In conclusion, he stated, that all authors agree that vegetable substances increase the albumen of the blood; in other words, according to Mr. Bulley's views, its globularity and firmness; and thus prevent its escape from the vessels in the shape of cancerous tumours; and when these have already formed, that such remedies are capable of suspending the action of the disease, and where they have done so, that operations either by the knife or caustics may be performed with the fairest chance of success, provided the vegetable remedies are continued for some time after the apparent cure of the disease.

Perhaps no subject connected with our branch of science has engaged greater attention, of late years, than that of cancer; and if any proof, more substantial than another, were needed, that we in reality know nothing of the matter, it would, I think, readily be found in the discrepancy of opinion that exists, both as to its nature, its mode of origin, and its treatment. The cell theory of Müller seems now by many to be discarded, whilst by others it is retained in its pristine favour; and so far as I can find, no satisfactory solution of the difficulties that surround the subject has in any measure been obtained. The views Mr. Bulley has propounded will not, I fear, share better than their predecessors, although their soundness is devoutly to be wished, as we should then, if I understand them aright, be relieved from much of the perplexity that now attaches to us in their management. If correct, operations for the removal of the malignant masses would, unless as inconveniences, be entirely dispensed with; seeing that, as soon as the vegetable substances had begun to exert their benign influence on the economy, further effusions, through the increased globularity and firmness imparted to the blood-corpuscles, would be diminished; and when the system had been fully brought and kept under their power for a time, no hemorrhage—no cancerous deposit—could take place.

The question of operation in cancerous affection is one of momentous interest, both as regards the frequency of the disease and the issues it involves. There can be no doubt that two very distinct classes of cases present themselves in practice: one in which the cachexia (so far as its external expression at least) does not occur; and another in which it is clearly marked in varying degrees of intensity; that in the one class operations have been much more successful than in the other, both

as to the cure of the disease, and, where it *has* returned, as to the prolongation of life. In the former class, the local disease *seems* to precede the cachexia, which its advanced stages introduce; and in the latter, the cachexia appears to precede the local disease. The works of Professor Walshe and the statistics of Mr. Paget shed terror into the minds of surgeons as to the propriety of operation at all; and certainly, had the statements of these high authorities been substantiated by their enlarged experience, it would have been well for humanity had operations been abandoned. But Mr. Paget has, with enlarged observation, materially altered his conclusions; and instead of the former announcement,—that operations shortened the lives of their subjects by many (by thirteen) months,—he now intimates the cheering intelligence that, in well selected cases, the operation will prolong life; and that the proportions of deaths within the first two years, in those operated upon, has been less than in those left alone, amounting in the former to less than 11 per cent., and in the latter to 30 per cent. The propriety of operation must then be, as heretofore, decided by individual conditions. If the cachexia is slight, or not apparent, and there is no family proclivity to malignant disease,—when the local ailment can be freely removed, and no other contra-indicating reasons in the way of existing disease in other organs can be found,—we ought undoubtedly to operate. In cases of worse aspect than this, with the advantages we now possess in chloroform, we are justified in operating; but when the cachexia is strongly marked, the local disease extensive,—although it can be encircled by the knife, where disease of a like or other kind is found involving other organs,—we shall best consult, I believe, our patients' welfare by declining operations, and trusting to the relief afforded by soothing applications.

I need say nothing as to the curability of cancer otherwise than by caustics or the knife, as—although Velpeau, Cloquet, and some others, still insist that it is so curable—the general opinion, I believe, is, that when diagnosed by the microscope and the usual signs and symptoms, it is beyond the reach of cure. And I am sure I need not detain you with a history of the influences of *puccoon* in the hands of Dr. Fell. No individual, in his searchings after truth, who even dips into his treatise, can be otherwise than satisfied that Dr. Fell's performances have come far short of his professions; that indeed he has no real remedy for cancer; and that, apart from the chloride of zinc, *puccoon* "is a mockery, a delusion, and a snare."—*British Med. Journal, Aug.* 15, 1857, *p.* 698.

11.—ON THE TREATMENT OF CANCER.

By T. Spencer Wells, Esq., Surgeon to the Samaritan Hospital.

[In the early non-ulcerated stages of cancer, our art is not so powerless as is sometimes asserted; for growths with all the characters of cancer have occasionally disappeared under the influence of remedies, others have remained completely dormant for years without affecting the health or shortening the life of the individual. What must be our treatment, then, in these cases?]

In the first place, in the treatment of cancer, the hygienic measures so necessary in the treatment of all chronic diseases, are of paramount importance. Plenty of good, wholesome food, a well-drained, well-ventilated house, pure country air, extreme cleanliness of person and clothing, sufficient exercise, clothing which exerts no injurious pressure on the diseased part, with mental occupation and amusement, will do a great deal towards the formation of healthy blood, the deposit of healthy tissues from it, and the removal of effete matter or formations of a low aplastic character. Ordinary medical treatment cautiously adopted may assist the hygienic treatment very materially. Deficient action of skin, kidneys, or digestive organs may be corrected. Alkalies, given with or after meals, often relieve a kind of digestive derangement common to cancerous patients. Hence the use of Vichy water and carbonate of soda. Pain may be alleviated by opiates or hemlock. Some of the preparations of iron often act admirably in improving the general health. Well-marked cancerous tumours have diminished in size and become quite dormant under the use of iodine in combination with iron; and the iodide of arsenic, in doses of one-sixteenth to one-twelfth of a grain twice a day, has been used with excellent effect since it was first recommended by Dr. A. T.

Thompson and Dr. Walshe. The remedy, however, which I have found most useful is the bromide of potassium with cod-liver oil. Given in doses of five to ten grains of the bromide, with one, two, or three drachms of the oil, three times a day, the effect upon the local tumour and the general health is really remarkable. The pain very speedily diminishes. There is, first, a cessation in the growth of the tumour, and then a process of shrinking goes on, while adherence to the surrounding parts is lessened, and a tumour which was firmly united to the surrounding parts becomes movable, detached as it were, and is felt like a hard, movable, senseless ball beneath the skin. The last cure for cancer advertised in London is the inhalation of oxygen; and a Dr. Birch has published a pamphlet about it in connection with an apparatus sold by a firm in Regent street. This, if it is not likely to do much good, can hardly do harm.

As to external remedies, which may be looked on as curative, all attempts to affect the nutrition of the part by the application of leeches or ligature of nutrient arteries, must be abandoned as useless. Friction, percussion, and palpation, so much used of late by certain *rubbers* of Edinburgh and Brighton, with the hope of procuring absorption, are complete failures. Electricity and galvanism have been tried, but the results do not say much for their efficacy. The local means which really have some good effect in cancerous tumours, are preparations of lead, iodine, and bromia. Lead in the form of plaster or embrocation is a most soothing application. I have seen it used very largely at the Cancer Hospital in both forms and with very excellent results The embrocation in common use there, consisting of equal parts of the liquor plumbi, almond oil, diluted acetic acid and water, is a really useful application, allaying pain, and apparently hastening the absorption of the tissues around the tumour, indurated by inflammatory infiltration. Frictions of solutions of iodide of lead or iodide of potassium in glycerine, without producing any irritation of the skin, appear to be active promoters of absorption. The iodide of lead was recommended by Dr. Walshe, and is much used now by Dr. Fell. The solution of bromide of potassium in glycerine appears to be even more efficacious, but on this point I do not like to speak confidently without more extended experience.

Dr. Arnott's freezing process is really of great service. I have shown you how to apply this on a former occasion, so that I need only say now that it is a remedy of very great value in the treatment of cancer, that it allays pain, checks growth, and has reduced many large adherent tumours to a small, movable, indolent condition.

Then mechanical treatment is often very useful in non-ulcerated cancer. It has long been believed that the nutrition of any part of the body might be lowered, and absorption of any product of disease promoted, by methodical compression.

The plan of bandaging the mamma and shoulder is very objectionable, as it interferes with the free motions of the arm and chest, so necessary to the general well-being of the patient. As a means of producing equal constant pressure, exact in degree and easily moderated or increased, nothing equals the air-truss invented by Dr. Neill Arnott. An air-cushion, supported by a shield, is adapted to the diseased part, while a spring supported by a belt is arranged to act on the cushion in such a manner that any desirable amount of pressure can be kept up without interfering in the least with the free motions of the chest. Applied at first so as merely to support the part, and then to exercise gradually increasing pressure upon it, the results are very remarkable. The pain very soon ceases, the swelling in the surrounding parts diminishes and disappears, the large tumour splits up into several smaller divisions, and in some cases entirely disappears, not a trace of any tumour or induration remaining, while in other cases the remaining swelling is quite passive, painless, and innocuous. I saw a lady a few weeks ago with a small tumour like a walnut in her breast, quite harmless and not causing the least anxiety, which I saw nine years ago under this compression treatment, and it was then to all appearance a large cancerous tumour on the point of ulcerating. I have not the least doubt that if the tumour in that case had been removed, either by the knife or by caustic, the patient would have been dead seven or eight years ago.

When ulceration has taken place, there are a number of local applications which

12.—ON A NEW CAUSTIC FOR CANCER.

By Weedon Cooke, Esq., Surgeon to the Royal Free Hospital and to the Cancer Hospital.

[In all cases in which the knife can be employed, the use of caustics should be abjured, which are barbarous, tedious, unsafe, and extremely painful. The only cases in which caustics are admissible, are those in which there is an open ulcer, having attachments to bone or to vital parts, for the sake of obtaining a healthy granulating surface, which may even in some cases cicatrize, provided the patient be well supported during the treatment.]

Granting, then, this limited use of caustics, it becomes necessary to consider what agent is the least objectionable.

I have experienced two cases, and have heard of others where chloride of zinc was employed, in each of which a severe and dangerous attack of pleuro-pneumonia followed the application, and I cannot but believe was consequent upon it. This and the pain it produces urged me to seek for some agent more free from objection. The sulphate of zinc gives great pain; the potassa fusa destroys the mass rapidly, but it grows again after this application. I tried the anhydrous sulphates of copper and iron, and very useful caustics they proved, giving less pain than others, but being at the same time too mild in their action for the destruction of large growths. Eventually the powerfully destructive nature of manganic acid was suggested to me, and Mr. Bastick undertook to combine it with a base—viz., potassa. In this combination I believe, from what I have seen of its effects, we have a most invaluable agent. This caustic contains a very large quantity of oxygen, and would seem to act by imparting this to the tissues, thus producing a chemical combustion. The pain produced is much less than that of any other caustic, and in some instances after the first minute or two there is no pain at all, and I have observed no after ill consequences. This "manganese cum potassa" caustic is a dark green powder, and may be applied very readily by the means of a small pepper-castor. A thin coating of it will remove instantly all unpleasant odour from the ulcer, and when used for reducing the exuberant growth, must be applied in a layer as thick as the tissue to be destroyed. By dropping a few drops of water upon the powder after it is applied, it will form a paste, and adhere to the part, after which some simple dressing may be applied. By means of carrot poultices the eschar drops off in three or four days. If necessary, the manganese is reapplied in the same easy way until the diseased mass is all destroyed, and the subjacent healthy tissues granulate and cicatrize by means of a slightly stimulating lotion of potash. Velpeau has a high opinion of the sulphuric acid, but could not succeed in making a paste with it to limit its action. This new combination of manganic acid and potassa will, I hope, attract his attention, and supply him, as well as my own countrymen, with an efficacious caustic, convenient for application, less painful than all others, and free from injurious effects upon the constitution. The well-known antiseptic effects of manganic acid suggests its use in all foul and phagedænic ulcers, and I have no doubt that large crops of warts may be conveniently removed by its agency.—*Lancet*, *August* 22, 1857, *p.* 193.

13.—DR. FELL'S TREATMENT OF CANCER.

[The following account of Dr. Fell's "secret," such as it is, is given in full, in his own words:—]

"Many remedial agents were tried without producing the desired effect, and all efforts to cure the disease were for a long time unsuccessful, and apparently hopeless, until I heard of a root used by the North American Indians on the shores of Lake Superior, which the Indian traders told me was used by them with success in these affections. It is a perennial plant, known commonly amongst these Indians by the name of puccoon, but from the red, blood-like juice that exudes from it when cut or bruised, is called by botanists the Sanguinaria Canadensis. It grows in great abundance in the wild forests and plains of the far West; indeed, in early spring the ground in many parts is covered by its large white blossoms. Such a plant, with showy snow-white flowers, would naturally soon attract the attention of the savage; but when he found that whenever this plant was injured

or a leaf-stalk broken it exuded a copious stream of a blood-like fluid, he immediately considered it as sacred and a great medicine. And no doubt some poor squaw, suffering from this dreadful disease, was the first who applied it, after having tried all the simple herbarium of the uneducated savage without success, and then, in despair, applied the bruised bloody pulp of the white-flowering puccoon. This extraordinary plant, although unknown to civilized man as a remedy for cancer, has been long well known as a powerful emmenagogue and alterative, and, as such, has been admitted into the Pharmacopœia of the United States; and it is a question well worth consideration to ascertain how far its connexion and power over the uterine functions has to do with its influences in destroying the peculiar cancerous diathesis existing in most cases.

"According to Wood and Bache, 'sanguinaria, when applied to a fungous surface in the form of powder, acts as an escharotic. It has been given in typhoid pneumonia, catarrh, pertussis, croup, phthisis pulmonalis, rheumatism, jaundice, hydrothorax, and some other affections, either as an emetic, nauseant, or alterative, and its virtues are highly praised by many judicious practitioners.'

"The first experiments made with the puccoon were upon ulcerative surfaces, and although requiring months of continued application, yet the removal of the tumour was effected, and the patient cured. It was then combined with various substances with a view to hasten its action; but none appeared to do so well as the chloride of zinc, for with this compound large ulcerated tumours were removed in a few weeks with comparatively little, and in many cases no pain; at the same time obtaining by absorption and by the internal use, all the good effects of the puccoon.

"The next object was to adapt the treatment to non-ulcerated tumours; and, as a preliminary step, the cutis was destroyed by nitric acid, and the paste applied; but it was found that the eschar produced by each application was so thin, that it would require a long time to remove a large tumour.

"Incisions about half an inch apart were then made through the eschar, avoiding the living tissues, and the paste spread upon strips of cotton inserted into them daily; this plan succeeded admirably, and is *believed to be entirely original.*

"It was also found that although the action of the puccoon was much hastened by the addition of the zinc, yet it was slow enough to allow its complete absorption, thereby enabling it to exert its peculiar constitutional effects, and at the same time removing the diseased mass in a few weeks.

"The compound generally used is prepared according to the following formula:—

℞. Sanguinariæ canadensis, ʒ ss. vel ʒ i.; chlor. zinci, ʒ ss. vel ʒ ij.; aquæ ʒ ii.; pulv. sem. tritic. hibern., q. s. s. Mix, and form a paste the consistence of treacle.

"Sometimes the sanguinaria is used in the form of decoction, by boiling it down in water from four to two ounces: in this case no water is used in mixing the paste.

"The proportions of the sanguinaria and zinc are varied in different cases according to the effect produced.

"This is spread upon strips of cloth, cotton, or wool, and inserted daily into the incisions; generally in the course of two to four weeks the disease is destroyed, and the mass falls out in the course of ten or fourteen days afterwards, leaving a flat healthy sore, which generally heals with great rapidity. This treatment refers chiefly to those cases that are well marked, or that have made some progress in their destructive career; but we often meet with other cases of an incipient nature, where the disease, although fully developed, is still in a quiescent or dormant state. In such cases, I often accomplish a cure by means of absorption, giving no pain to the patient, and not injuring or removing any important part, as the breast, which must occur if the first mode of treatment is resorted to. Not only is this of use in incipient cancer, but I have seen it of much use when applied to the lymphatic glands, which had become secondarily affected. In such cases, I remove the part primarily affected, *en masse*, by means of the sanguinaria paste, applying at the same time the following ointment, spread upon cotton, over the enlarged gland or secondary tumour. This ointment is composed as follows (and called the brown ointment):—

℞. Sulph. zinci ʒ vi. ; sanguinariæ, ʒ ij.; myricæ ceriferæ, ʒ j.; extr. opii (aquos.), extr. conii, aa 3 vi.; ungt. cetacei, ʒ vi. Misce et fiat ungt.

"In conjunction with this preparation, I use an ointment of the iodide of lead, generally applying each twelve hours alternately. The following is the formula used:—

℞. Iod. plumbi, ℈j.; glycerine, 3j.; ungt. cetacei, ʒ ij. Fiat ungt.

"With a steady persevering use of these two ointments I have often dispersed incipient tumours, which I have no doubt were cancerous.

"These are the external means of treatment I employ, which, although in themselves eminently successful, yet I am not content with them alone, but also pay particular attention to the general health, ordering a nourishing and sustaining diet, besides giving internally the puccoon in small and repeated doses. A remedy that exerts so much influence when applied externally, must be exhibited with caution, I therefore seldom exceed half-grain doses, three times daily. This is given in the powder or decoction; in the former cases I give it either alone or combined with the sixteenth or twentieth of a grain of the iodide of arsenic, and one grain of the extract of cicuta made into pills; or, if given in decoction, I generally combine it with the fluid extract of taraxacum.

"The ointment of the sulphate of zinc I have been in the habit of applying with marked success, in cancer of the womb. Unlike the Vienna paste, it can be applied not only with safety, but with impunity, as it does no injury to the adjoining tender parts.

"I have also used these preparations with marked benefit in cases of lupus, both exedens and non-exedens; indeed, I have never known a case in which the judicious use of these remedies has failed.

"Indolent ulcers have long been an opprobrium to the profession from their intractable nature; in such cases these applications are most efficacious, as I have known phagedenic and indolent ulcers of long standing to be speedily and permanently cured in the course of two or three weeks. In such cases I have often accomplished a cure by using the sanguinaria alone, but even then I find much benefit in using the combinations as described in the above formulæ.

"Having given in detail the mode of preparing and applying the remedies, it only remains to state the results of the treatment as *compared* with the removal by the knife; and in doing so I shall employ the tables generally adopted by writers upon the subject—viz. that from eight to eight and a fraction out of every ten cases operated upon returned within two years; whereas it is found, that out of every ten cases treated by the puccoon, only about three return in the same time.

"The first patient suffering from cancer and treated with the puccoon of whom I have any knowledge is still living, in the enjoyment of good health, although the disease was removed fifteen years since.

"Another advantage of this plan of treatment is, that a great number of cases that no surgeon, however fond of the knife, would venture to operate upon, can be treated with a fair prospect of success."

Such is the sum and the substance of *all* that Dr. Fell has to say, and which amounts to this: that chloride of zinc, to act as an efficient escharotic, requires to be more diligently and decidedly applied than surgeons have generally been disposed to use it. No one for an instant will suppose that the sanguinaria has anything to do with the operation of the really active agent. The story of the discovery of this wonderful remedy reminds us of our old friend the picture of the North American squaw with the long tresses, displaying the efficacy of the "Balm of Columbia," which also comes to us, oddly enough, from the "shores of Lake Superior." Turning, then, for a moment to the action of the chloride of zinc applied as Dr. Fell recommends—a practice not by any means so original as he wishes to be believed,—we find it capable of removing tumours in certain cases in which the knife is not available. This operation it performs slowly and *most painfully*, as we have ourselves witnessed in more than one instance; so painfully, indeed, that we should never, for a moment, recommend the use of this caustic in any case in which the knife could be used.

There is not a particle of evidence in Dr. Fell's book to show that his remedies *control in the slightest* degree the constitutional operation of the cancerous diathe-

sis. All his "selected cases" date from July, 1855,—a period far too brief to prove that the disease may not return. Thus, a lady came under treatment in July, 1855; in September the fungus came away; in October the disease "again re-appeared." In February, 1856, the ulcer had healed, but we learn that on

"April 16th, Dr. Pettigrew and I called on Miss W—— to-day, and found her very ill from the rheumatism. I have some grave fears as to her recovery, as there appears to be some pulmonary difficulty connected with the case. The breast is quite well, and the cicatrix scarcely observable.

"April 29th. Miss W—— died this morning at 7 o'clock."

There is very little doubt that "the pulmonary difficulty" here mentioned was cancer of the lungs or pleura.—*Lancet, June* 13, 1857, *p.* 606.

14.—*The Value of Sulphate of Copper in Glossal Cancer.*—We have watched very particularly the treatment at the Cancer Hospital of cancerous ulceration of the tongue, distinguished by its deep excavated character, with sometimes fissures running from its sides and irregular puckerings, and very generally preceded by nodular enlargement, with difficulty in the use of the organ. Who amongst us has not felt the sensitiveness of a little pimple on the tongue, arising from a hearty supper the night before, or from some slight indigestion? These small pimples often feel very sore and tender. If they are contrasted with the pain and embarrassment in the use of the tongue affected with malignant ulceration, an idea will be gained of the really terrible nature of the latter. Patients with glossal cancer seem to resign themselves with great fortitude to their sufferings, and it is a gratification indeed to the humane surgeon to find his measures afford relief. Now, of the various substances employed by the surgeons at the Cancer Hospital as a local agent, none appear to have so much control over the ulcers as powdered sulphate of copper. This substance is very efficacious in cancer of the tongue and cheeks. It is applied by means of a camel-hair pencil, generally twice a day, and allowed to remain four or five minutes; the mouth is then freely washed out with tepid water. It produces some pain, but this is willingly borne when the relief is found to be so great; and an excellent wash of borax, half an ounce to a pint of water, used frequently during the day, keeps the ulcer and the tongue clean and fresh looking. Under the use of the copper, we have seen the ulcers slowly heal up and cicatrize, and a return to comparative comfort, as contrasted with the patient's previous condition.

On the 25th of August, a man from Farnwood, Matthew T——, aged sixty-two, presented himself for the first time with a deeply excavated, cancerous ulcer of the right side of his tongue, extending towards its base. It had been existing for two years, and fears now were entertained that the disease would extend to the roots, and destroy the organ and the patient's life. The treatment adopted was that we have described, with the addition of a soda powder twice a day for a week or ten days. We have no doubt that this plan will prove of service here, as it has already done in so many others.

Powdered sulphate of copper is an agent of great value, which cannot be underrated in these painfully distressing cases. We may remark, as a rule at this hospital, anodynes are avoided as much as possible, and pain is sure to become less under the sustaining treatment so commonly the practice here.—*Lancet, Sept.* 12, 1857, *p.* 273.

15.—ON THE EMPLOYMENT OF CALCAREOUS SALTS IN THE TREATMENT OF RICKETS AND OTHER MORBID CONDITIONS.

By Dr. W. Budd.

[Dr. Pidduck has recently recommended the employment of calcareous compounds in the treatment of certain states of defective nutrition. Dr. Budd considers that the most striking illustration of its good effects is in the treatment of rickets.]

But short of rickets, which may be regarded as an extreme case, there are many states of very common occurrence in which their remedial power is no less

manifest. Among the out-patients of the Bristol Royal Infirmary are numbers of children with large heads, tumid bellies, and pasty complexion; whose spines are too weak to support their bodies; who are slow in intellect and backward in teeth and speech, and who have reached the age of sixteen, eighteen months, and perhaps more, without ever having shown any desire to take to their feet. These characteristics, varying, of course, more or less in degree, make up a pathological portrait which most physicians to large hospitals situated in great towns will recognise as the type of a numerous group. In all such cases I have for many years past been in the habit of giving a simple combination, consisting of from five to ten grains of phosphate of lime, three times a day, in chalk mixture. Where there is a palpable degree of anæmia, some simple chalybeate is added to the treatment. Theoretically, bone earth would seem to be the more appropriate agent; but when I began this practice, having no bone earth at hand, I adopted as a temporary expedient the mixture I have named, and found it answer so well, that what was first tried as a make-shift has since been purposely adhered to. Nothing can be more satisfactory than this plan of treatment. At the end of a week the improvement in the patient is already very apparent; at the end of a fortnight it is, generally, conspicuous. The result is not only a rapid consolidation of the bones, but, what perhaps is still more interesting, an equally rapid development of the mental and other powers. It is no doubt owing to the nature of the case that this result is as uniform as it is complete. In these two characteristics this method reminds me more of the virtue of lemon-juice in scurvy than almost anything else I have seen in physic. The two things have probably this much in common, that, in supplying the one thing needful, they act on the same principle. Remedies which act thus have this paramount claim on the physician, that they admit of no substitute. In scurvy, unless the food or the medicine contain the antiscorbutic, all nature may be ransacked in vain for a remedy. In many of these states of defective nutrition in children, there is reason to believe that the same is true of the calcareous salt.

I have long thought it deserving of the most anxious inquiry, whether the growing deterioration and tendency to early decay which dentists have remarked in the teeth of the rising generation, may not be due to the insufficient supply of the inorganic constituents of these important organs in the food by which children are nourished during the period of dental development. In towns especially, the whole mode of living, not only of man but of the animals which minister to man, is so artificial, and so few articles of diet are supplied under the primary conditions of nature, that such a contingency is quite possible. In default of better, Dr. Pidduck's biscuits, which contain lime derived from teeth, would furnish a simple means of meeting it. Rather more than a year ago, I suggested to an eminent druggist here the manufacture of biscuits of precisely similar composition, with a view at once to the teeth-bones of these young subjects.

I may add, that if my experience do not deceive me, the same mixture is a very sure remedy in that anxious and sometimes fatal disorder, *laryngismus stridulus*. At least, in some ten or twelve cases in which I have now tried it, the speedy subsidence of the malady has followed the employment of the medicine. In some instances the cessation of the morbid phenomena has been so rapid, that I have been led to suppose the virtue of this calcareous mixture in this last disease must be due simply to its antacid properties. But this is a question into which I have not cared inquire.—*British Med. Journal*, *June* 13, 1857, *p.* 514.

DISEASES OF THE NERVOUS SYSTEM.

16.—ON TETANUS.

By Dr. S. H. Hobart, A.B., Medical Officer, Cork Dispensary.

[How can we best remove the source of irritation? This is the first question which the medical practitioner is called on to solve on being called to treat cases of tetanus.]

Should it be caused by a bad injury, such as would of itself materially endanger a limb, independently of the complication with tetanus, let amputation be at

once resorted to; but should the injury be of a less serious nature, and be so situated that the nerves leading from the part can be readily divided, then by all means let the preference be given to this milder course; but, notwithstanding the success attending this plan of treatment in Dr. Murray's case, and the high opinions entertained of it by some writers, yet it must be admitted that, though a milder operation, it is applicable to comparatively few cases; we can but seldom be sure of what nerve, or how many of them, may be in error; nor, even should this be decided, would it be always possible to divide those that we should wish, without the risk of leaving a paralyzed and useless limb, or of wounding some other important part. In other cases the wound may be very trifling, one affecting merely the skin, in which case no demonstrable nerve may be ascertained to be injured. Under such circumstances we may resort to the expedient referred to by Mr. Cooper as being so successful in University College Hospital, and also spoken favourably of by others, viz.: almost surround the parts with deep incisions, or, what would appear still more satisfactory, excise the injured parts altogether, and bring the edges of the new wound together. And, indeed, should this operation not prove almost immediately successful, we ought then to consider what nerve supplies this portion of integument, and at what part of its course can it be easily and safely divided. I would venture still to hope that this secondary operation might be attended with benefit, even after the excision of the injured part had failed, on the supposition that inflammation may have extended up the nerve for a short distance; and that this may, in some instances, be capable of keeping up the disease, on the same principle of reflex action, while yet the medulla oblongata had not suffered any injury; and the fact that the nerves of the affected limb have been often found in an inflamed condition shows the possibility of this theory.

The success of any of the above means must, of course, mainly depend on the promptitude with which it is undertaken; if done in the very early stage, we may fairly hope that the disease will be thereby arrested, but this can occur only in case the local irritation is still the sole cause. But suppose the secondary cause has already commenced in the medulla oblongata, may we not expect that some advantage may still be derived from the same treatment? If irritation "transmitted to the nervous centre," &c., be in the first instance capable of producing the disease, it must, after another cause for the same is established, be still calculated to produce the same result. And thus, there being two causes in operation, the effect must be doubled; but when the primary cause is removed we have then but one condition to treat, namely, that of the nervous centre, which we may hope to cure by appropriate treatment, without the danger of its again returning, whereas, had we even succeeded in curing it while the primary cause remained, it would, in all probability, be again renewed by the same means by which it was first excited.

With regard to the more extensive use of chloroform, as also of nicotine, the wourali poison, and similar medicinal agents, I would be very cautious of pronouncing any of them deserving of the name of a cure for tetanus. They will arrest the spasms, and thus relieve from much suffering, and if the system be brought early and fully under the influence of any one of them, and its effect be kept up unremittingly, until the source of irritation is removed, it may possibly prevent the development of the secondary lesion in the nervous centre. But should this condition of the nervous centre (or the secondary cause as I have termed it) have already set in, it is quite evident that no remedy of this class can have any effect in curing it. But though such agents can remove neither the primary nor the secondary cause of tetanus, the fact of their allaying suffering, and the hope that they may prevent the development of the secondary cause (though they cannot cure it) renders them well worthy of our close attention. Let us inquire, therefore, which of those agents is the best suited to our purpose, which will act most directly on the disease, and which has the least ill effect on the system generally? The object in all cases is to produce paralysis of the voluntary muscles; this is accompanied, where chloroform is used, by a complete loss of consciousness, preventing the patient from describing his own feelings, a most important guide as the case advances; he is also unable to call for food, or to take it if offered to him, unless he be allowed to recover, in some measure, from the

effect of the anæsthetic; and then, as soon as consciousness begins to return, the muscular contractions reappear in equal proportions. There is another objection which I conceive exists against the use of chloroform in cases of tetanus, namely, that of causing congestion of, and even effusion into, the bronchial tubes, upon which points I have made some remarks in describing a case of tetanus, in another part of this journal. Nicotine, on the other hand, seems to be capable of producing the desired effect without interfering with the mental faculties; in fact, it brings the system into a state almost the direct reverse of tetanus. It appears also from recent experiments that it is likely to prove useful as an antidote against strychnia. Professor Haughton has lately read before the Irish Academy an account of some experiments performed by him, on this question, with the following results:—Frogs placed in a solution of nicotine, were quickly paralysed, and died in a state of complete relaxation; others placed in a solution of strychnia died of convulsions; but when others were placed in a combined solution of the two agents, though this was amply strong to cause death by either, it only caused slight convulsions, and that after a long immersion, and the frogs, on being removed from the bath, soon recovered; and had it contained a little more nicotine, there is little doubt but that the effect of the strychnia would have been completely neutralized. Now, as the symptoms of tetanus and those of poisoning with strychnia are almost identical, it may fairly be expected that nicotine would be equally useful in the one as in the other. Still there is one strong objection to the use of this medicine in such cases, namely, its extremely depressing effects on the circulation.

Now, tetanus itself so debilitates the system that quina, wine, and broth, are of late among the most favourite remedies; and when we attempt to cure such a disease with, perhaps, the most debilitating agent in the Materia Medica, the risk must be obvious. It therefore remains to inquire, are the same objections applicable to the use of the wourali poison, or is it capable of paralyzing the voluntary muscles, without interfering with the action of the heart? On this point I would refer to an experiment by Dr. Pavy, of Guy's Hospital, the principal features of which were as follows:—A pup, four or five months old, had a small quantity of the poison introduced under the skin of the back; the animal soon became weak, and shortly was quite unable to stir; the limbs and the body became perfectly flaccid, and at last all appearance of life ceased. Meanwhile, a tube had been introduced into the trachea, and as soon as the animal was unable to breathe naturally, artificial respiration was established, and the heart's action, which had previously become very feeble, was quickly restored, and it continued to act firmly and regularly so long as artificial respiration was continued, showing that wourali kills by paralyzing the voluntary muscles, and, among others, those of respiration; death therefore resulting from asphyxia, while the heart's action is not at all affected, except as the result of impeded respiration. By another experiment he found that, under the influence of strychnia, also death by asphyxia was the result; but in this case the thorax was fully inflated and rigidly fixed, while with the wourali it was collapsed and flaccid. This rigid condition of the chest was found to render artificial respiration very difficult; but on raising the sternum and allowing the pressure of the air to act on the lungs and assist in expiration, it was easily established, and, as in the former experiment, the heart, which had almost ceased to act, quickly recovered in the same manner. The opposite and counteracting effects of strychnia and wourali have been more fully illustrated by Dr. G. Harley, viz.:—"1st. A frog was poisoned with 1-500th of a grain of wourali. Three minutes after he had become perfectly insensible, 1-120th of a grain of strychnia was injected; in five minutes he became tetanic. 2d. A frog was poisoned with 1-120th of a grain of strychnia; three minutes after, tetanus was strongly marked. He was punctured with 1-500th of a grain of wourali; in seven minutes tetanus disappeared. 3d. 1-500th of a grain of wourali and 1-40th of a grain of strychnia were injected into the abdomen of a frog: in five minutes it became very tetanic, in twenty minutes more it was perfectly flaccid, and next day was perfectly well." (Braithwaite's Retrospect, vol. xxxiv.) These experiments again would encourage us, from the analogy already alluded to, to hope that wourali might have a like influence on tetanic spasms.

There is another question, however, which arises in considering the value of

each of those agents, namely,—By what means do they occasion paralysis? Is it by their action on the nervous system, or by some influence over the muscles themselves, independently of all nervous supply? That chloroform and nicotine act on the nervous system there can be no doubt, but the *modus operandi* of wourali is much less known, as being a rarer and more novel agent. Dr. Pavy states that it acts on the nervous system; for that, if any of the nerves be irritated, or an electric current be passed along them, no muscular action is produced, but that if a current be passed through the muscles themselves, they immediately contract. He does not appear, however, to have proved this himself by any particular experiment, but only states it as a fact. I have good reason to know, however, that by a series of experiments lately conducted in Paris, and which will be shortly published, it has been proved that on this point Dr. Pavy is in error, as I have been informed by an eye-witness, that in the experiments alluded to, electricity, passed through the muscles of an animal under the influence of wourali, did not cause the slightest contraction; but that when the muscles of an animal paralysed with nicotine were electrified in the same way, they contracted freely. In either cases irritation of the nerve, or electricity passed along a portion of it, did not cause contraction. This proved that either the nerves or muscles were paralysed: in the case of the nicotine the muscles were proved not to be affected, as they contracted when the stimulus was applied directly to them; and in the case of the wourali it was shown that they were affected, as they did not contract. We may therefore conclude that wourali acts on the muscles, but has no influence on the nervous system. I regret that I am unable to enter more minutely into those experiments, but as they have not yet been made public by the investigator, I am not at liberty to speak more fully.

This question, as to the *modus operandi* of wourali, &c., is I conceive a matter of no small moment in the treatment of tetanus. But in order to explain its importance, I must here beg to revert to Dr. Copland's theory, that the secondary cause of tetanus (that affecting the nervous centre) is caused by the violent action of the muscles, &c., for in this he appears to be in some measure in error, though until we come to consider the action of such a medicine as wourali, the errors appear to be merely technical. Thus he looks upon the muscular contractions as demanding an increased supply of *vis nervosa*, and that, to supply this, increased energy was necessary on the part of the nervous centre, and hence the increased vascularity, as if the muscular contractions were the cause of the nervous force being developed; whereas, if we consider for a moment, we must see that it is the irritation transmitted from the injured part that induces an increased excitement of the nervous centre, which then develops the nervous fluid in unwonted quantity, and that the fact of the muscles not contracting under the influence of this nervous force, either in consequence of their being paralyzed by wourali, or any other cause, cannot diminish the excitement of the nervous centre, nor prevent the development of the secondary cause of tetanus. But as nicotine and chloroform have at least some action on the nervous system, they may be capable of rendering it insensible to the irritation transmitted from the local injury, in which case they would prevent the development of the secondary cause as long as their influence was fully kept up. I would, therefore, recommend that if it be impossible to remove the local irritation (i. e. the primary cause), one of those agents should be used; but if this be got rid of, the preference should be given to the wourali, in consequence of its not acting on the heart or other involuntary muscles. The surgeon should, however, be fully prepared to keep up artificial respiration in the event of that function becoming seriously embarrassed.

If, however, we hope to cure tetanus after the secondary cause has commenced, we must not depend on those agents alone. We should use one or other of them on account of the good effects already alluded to, but we must at the same time pay due attention to the nervous centre, and remember that this is the part now chiefly engaged. It must be admitted that many cases of tetanus have been treated very actively for myelitis and spinal meningitis, and that the result does not warrant our pronouncing it a more successful plan than some others; but then it is to be remembered that while this was being attended to, other means were neglected; whereas, I have no doubt that if ever tetanus be brought to rank as a disease amenable to treatment, it will be by the adoption, not of any one plan of

treatment exclusively, but by a combination of all the means that are indicated in its different stages:—

First, the removal of the primary cause (the local irritation).

Secondly, in the event of this not proving efficacious, our attention is to be turned to the consideration of the secondary cause, and meanwhile we must endeavour in all stages to allay the convulsions by the most appropriate agents; nor are we to be unmindful of such means as the peculiarities of each case may require, as stimulants, antiphlogistics, tonics, sedatives, purgatives, &c.—*Dublin Quarterly Journal, Aug.* 1857, *p.* 140.

17.—*Treatment of Chorea.*—Dr. Barlow still continues the employment of the iodide of zinc in the treatment of chorea when complicated with struma—a remedy which he introduced into use, and to which we then adverted, about two years ago. In cases in which there is no peculiarity of diathesis he employs the sulphate, but in those cases in which any indications of struma exist he prefers the iodide. Besides its influence over the scrofulous cachexia, it is quite possible that the iodic element may be useful against the rheumatic diathesis to which the choreic is so close a congener. Good authorities are not wanting who would account for the frequency of heart complications with chorea by supposing that the latter is a condition very closely connected with rheumatism, depending upon similar causes, and occurring more frequently in those liable to it than in others. A little girl was discharged the other day from under Dr. Barlow's care in Guy's, in whom, under a course of the iodide of zinc for chorea, a loud cardiac bruit had very much diminished in intensity.—*Medical Times and Gazette, Aug.* 22, 1857, *p.* 195.

18.—CASE OF NEURALGIA OF THE ISCHIATIC NERVE, TREATED BY DR. A. WOOD'S NEW METHOD OF APPLYING THE OPIATE DIRECTLY TO THE PAINFUL POINTS.

By Dr. Geo. Lindsay Bonnar, Cupar, Fife.

[The pain in this case had a morning and evening exacerbation, and various erythematous patches appeared in different parts of the limb. The saccharine carbonate of iron and anodyne draughts were administered.]

The pain along the course of the nerve, and various degrees of occasional mitigation, gradually increased in severity, generally maintaining its periodic character, notwithstanding the application of various remedies, external and internal, until the usual means recommended in such cases were well nigh exhausted.

A strong embrocation, composed of compound tincture of camphor and Fleming's tincture of aconite, was rubbed into the hip and down the limb, morning and night; at first with a very slight improvement, which, however, soon disappeared. The parts were repeatedly subjected to fomentations of hot turpentine, until the skin became too tender and fiery for the application; this in some measure mitigated the pain for the time being, but never overcame it. Acupuncturation was also persevered in, not only over the hip, but all along the course of the nerve, even to the ankle, to which part the pain had gradually extended; and, from the decided improvement which took place, I had reason to hope that the continued use of this remedy would be productive of a cure. But, no! like all the other efforts to this end, it proved abortive, and, in the long run, had no effect even in temporarily lessening the pain. The modified cautery was also put in requisition, at a temperature considerably above 212° Fahr., sufficient in many parts to raise the skin in small blisters; but this remedy, generally powerful in relieving deep-seated pains, failed to give any other than a very partial and evanescent benefit. I proposed to vesicate the surface, and apply morphine to the denuded part; but, from an unalterable prejudice, my patient would not on any account submit to have the skin broken.

Meanwhile, almost every internal remedy which seemed calculated to effect an improvement in the patient had been administered. The iron treatment was *followed* by the iodide of potassium with sarsaparilla, which was for some time

persevered in. Arsenic was given to the utmost limits prudence would allow; but no improvement took place. The patient's strength was much impaired by the continual pain, which latterly had become excruciating; her limb was useless; her rest broken; her very existence made miserable. The least motion of the leg, the slightest turn of her body, brought on a paroxysm of agony; so that, in those intervals of comparative ease which she sometimes had, her enjoyment of life was destroyed by the constant anticipation of a sudden attack of acute suffering.

The only recommended remedies to which I had not had recourse during the persistence of this attack were croton oil internally, and, failing this, colchicum. But there were decided objections to both, as well as to any drastic purgative whatever; for a short time previously the patient had laboured under a very severe attack of dysentery, and was excessively weakened thereby: and this had left such a peculiar irritability of bowels for a long time after the severity of the disease had passed away, that I was afraid to employ any remedy which might possibly reinduce such a state.

It was now the beginning of October, and fully two months since the disease had manifested itself in a degree so severe as to require medical aid. As all that had been done had given only very casual relief, and the disease had gained ground steadily and surely, the relatives got anxious, in which state of mind I also shared, and it was agreed to consult Dr. Alexander Wood, of Edinburgh. Accordingly, I wrote to him, having been made aware, previously, of his proposed new method of treating neuralgia by the direct application of opiates to the painful points, and he saw the patient on October 5th.

Judging it to be a case of pure neuralgia, and well adapted for treatment by his new method, he proceeded at once to put it into practice. Having ascertained which was the most painful spot, by means of careful pressure along the seat of pain, just where the nerve escaped through the notch from the pelvis, he inserted the perforated steel nozzle of a small glass syringe, into the graduated body of which had previously been put twenty minims of Battley's sedative solution; and after the instrument had penetrated about an inch and a half, the fluid was sent home with gradual and firm pressure. The effect was instantaneous. The patient immediately began to saw the air with her hands, as if in a deep dream; in a few seconds they dropped powerless; her breathing became long and deep, and she lay in a profound sleep. This continued until an early hour next morning, when she awoke refreshed and reinvigorated, as if from a night's natural rest—the first she had had for many a long week: to her great delight, she was completely free from pain, and able to move her limb very readily without uneasiness. This was, however, too sudden and too complete to be expected to last long; there was still an acute twinge of pain when the thumb was pressed firmly down on the spot; but the patient was so delighted with the general effects of the treatment, that she readily—nay, anxiously, submitted to its frequent repetition.

Oct. 6th, 7 A.M. Twenty minims of Battley's solution were injected into the hip, which did not seem to produce the same immediate effect as last night's application.

Oct. 6th, 8 P.M. The patient has slept most of the day. The pain had disappeared; it was very obtuse at the hip on pressure, and more acute down the limb, but not at all of that lancinating character it was before. As the peroneal nerve seemed to be the part in which there was most pain, ten minims of Battley's solution were there injected, and the patient was left for the night.

Oct. 7th to 10th. The same treatment was continued morning and night, injecting at the one visit into the hip, and at the other into the leg, choosing the most painful parts, as indicated by pressure. The quantity was increased to forty minims daily.

Oct. 11th. The remedy was intermitted; but the pain, on the day following, threatening to return a little more severely than before, it was resumed for four days more, at the end of which time the pain had entirely disappeared (even on testing the state of the nerve by a smart blow) from the regions of the hip and leg, and was confined to the region of the external malleolus. The treatment was discontinued from this date, with the exception of two occasions, October 20th and 23rd, when on the former twenty, and on the latter thirty, minims were injected in front of the tendo Achillis, where the pain lodged very severely, but was relieved by the injection.

After this, the pain seemed to spread itself all over the dorsum of the foot, where at times it was very severe. Instead of further employing this new cure, which seemed to be now inapplicable to the case, from the very superficial seat of the pain, and the great extent of surface over which it spread, I recommended the cold douche every morning, and to be continued each time as long as it could be borne by the patient. This was faithfully persevered in, and after a short period the pain became much modified, and of quite a chronic character; in fact, it seemed to degenerate into a kind of nervous rheumatism of the part, and indicated the changes of the weather in regard to rain, frost, thaw, &c., by those peculiar gnawing sensations which all martyrs to rheumatism so well know by their experience.

At this date (August, 1857), nearly two years after the occurrence of the above case, the patient enjoys very excellent health, and never experiences the slightest throb or pain in the limb. She told me jocularly, not long ago, that she almost forgets which limb it is which was affected.

Remarks.—I have allowed a sufficiently long time to elapse since the case occurred to do away with all doubts as to the permanency of the cure; and my conviction is now, as it was at the time, that in the application of anodynes to the seat of painful nervous affections, by this novel method, we have added to our therapeutics a mode of employing powerful remedies, for which the profession and suffering humanity stand much indebted to the talent and ingenuity of Dr. Wood. Since the above case, other instances have come under my observation, and occurred in my practice, which serve to corroborate my opinion of the value of this mode of treating neuralgic affections: but I prefer giving the details of the foregoing case alone, as it seems to bear such unequivocal testimony to the value of the remedy as could only be weakened by adducing other and less perfect cases alongside. In it, I had the opportunity of fully testing the powers of the other remedies usually recommended in similar cases, save those from the use of which I was precluded by special circumstances, as alluded to in the narration: all of which appeared abortive. During the process of cure by injection, all other means were suspended, except a recurrence to the use of an iron tonic, for the purpose of repairing the energy of the system, much spent by previous suffering. Indeed, the simple efficacy of the one mode of treatment put in juxtaposition with the usual routine of blistering and dosing, which constitute the other, admits of strong contrast, but no comparison.

The instantaneous effects of the first application of the narcotic surprised me much. I confess that I should have felt very considerable alarm at the sudden plunge which the patient made into the depths of narcotism, had not Dr. Wood assured me that he had seen the same in other cases, and that it had never been followed by any unpleasant result. This constitutional effect of the remedy subsided almost as suddenly as it had been evoked; for it was scarcely manifested in any other form than drowsiness on the second occasion, and subsequently not at all, while its local effect seemed to undergo no diminution. There was here exemplified the most perfect adaptation of *cure* to *disease;* for, while a host of sympathetic constitutional symptoms became developed because of this local affection, as soon as the remedy had been applied directly to the diseased point, and had proved effectual there, the general system, relieved from an incubus, rapidly improved, the appetite returned, and every disturbed function resumed its normal condition, while the limb itself, which had become remarkably atrophied, gradually assumed a firm and full appearance, like its opposite.

For a full account of the application of the remedy, with cases, I beg to refer to an admirable paper by Dr. Wood, in No. 203 of the "Edinburgh Med. and Surg. Journal," April, 1855.—*British Med. Journal, Aug.* 29, 1857, *p.* 733.

19.—*Case of Wrist-Drop in a Compositor from local Lead-poisoning.* (Under the care of Dr. Hyde Salter.) [The patient, who had previously enjoyed good health, had for about a week been using new type, which, from the sharpness of its edges, had worn the skin off the extremities of the fingers of his right hand. Two days before his admission he began to lose the power of his right wrist, from

the absorption of lead by the denuded surface, and the paralysis was complete on his admission.]

From the local application of the poison, and the local limitation of its results, Dr. Salter determined to treat it locally; and bearing in mind the strong affinity of sulphur for lead, the ease with which the salts of lead are decomposed by sulphurets, and the facility with which the skin both absorbs and evolves sulphur, he determined to confine his treatment to soaking the hand and wrist in a solution of sulphuret of potassium, and thus to eliminate the lead. The solution was made of the strength of one ounce of sulphuret of potassium to ten ounces of water, and the patient ordered to keep his hand in it for three hours at a time, thrice in the twenty-four hours—nine hours in all; the solution to be tepid. No other treatment was adopted. In two or three days, the power of the hand and wrist began to return; in a week, the hand was as strong as the other, and the patient left the hospital well. Doubtless the thoroughness with which the treatment was applied tended greatly to the rapidity of its results.

There are two points of interest in this case, besides the effect of the treatment, illustrative of the differences between the wrist-drop of painters and that of compositors. It is always the right hand (we do not think the left ever) that is affected in compositors; in painters, it is generally both. In compositors, the hand is affected locally, before the system; in painters, secondarily to its introduction into the entire body; so that in compositors, you get wrist-drop first, then the blue line of the gum, and colic, (if ever;) in painters, the order is reversed. These differences evidently depend on the different method of the introduction of lead into the body; in painters, by respiration, with their food, and by their skin generally; in compositors, through the ends of the fingers of the right hand, with which they handle the type.—*Lancet, June* 27, 1857, *p.* 649.

DISEASES OF THE ORGANS OF CIRCULATION.

20.—ON THE SOUNDS OF THE HEART.

By A. T. H. Waters, Esq., Lecturer on Anatomy and Physiology at the Liverpool Royal Infirmary School of Medicine.

From the time of Laennec up to the present day, as many as twenty-nine theories have been proposed to account for these sounds. I now proceed to give you the principal ones held at the present day.

We have, as alleged causes, 1. Impulse; 2. *Bruit musculaire;* 3. Tension of the auriculo-ventricular valves; 4. The rush of blood through the narrowed orifices of the great arterial trunks; 5. The collision of the particles of blood with one another, and with the parietes of the heart; and, lastly, the pressing back of the semilunar valves. Such are the theories with regard to the first sound. With regard to the second, scarcely any difference of opinion exists; it is acknowledged to be due to the closure of the semilunar valves.

Let us now examine the various causes above alluded to. That impulse has nothing whatever to do with the first sound, is most satisfactorily proved by the following experiment; viz., that on removal of the anterior part of the thorax, and on placing the stethoscope on the surface of the heart itself, the sound is in no way whatever diminished in intensity, but if anything more distinctly heard than before. This observation was made by Dr. Hope, and has been confirmed by all subsequent experimenters. Independently of this demonstrative proof, it is difficult to imagine how the impulse could produce a sound, inasmuch as the heart does not strike the chest, always being in contact (in a state of health) with its anterior wall; but simply makes it bulge, as the ventricles during contraction assume a globular form.

I pass over for the present the second and third causes assigned, and come to the fourth, viz., the rush of blood through the narrowed orifices of the great arterial trunks. This view is assumed from the fact that the sound is produced by pumping fluid through tubes out of the body, and further that whenever the calibre of a vessel in the body through which blood is circulating is diminished, a

sound is produced. That such an analogy as is here assumed, exists between the forcible and sudden pumping of fluid through an inert tube out of the body, and the action of the heart in impelling its blood into the elastic and yielding vessels situated at its base, I cannot admit; nor is the condition of these vessels at their origin at all similar to that of a compressed artery. There is no natural impediment to the onward flow of the blood, the parts leading to the vessels are perfectly smooth, and the vessels themselves are of so elastic and yielding a material, that they dilate in every direction when they receive the blood, as can be readily felt if they are grasped during systolic action of the ventricles. If the arterial orifices were compressed during the time the blood was passing through them, so that their shape would be altered and their calibre diminished, then the same result would take place as in the arteries elsewhere; but no such compression occurs, nor is there any augmentation of sound over the base of the heart, as there ought to be if this view were correct; on the contrary, when the heart is exposed, and a stethoscope applied to it, the sound is found to be most intense over the situation of the auriculo-ventricular valves.

That the fifth cause assigned, viz., the collision of the particles of blood amongst themselves and with the parietes of the heart, a view advocated by some physiologists, can be an element in the production of the first sound, I can scarcely imagine. It appears to me that if such were the case, it would produce an almost continuous murmur, for there must be collision equally during the diastole of the ventricles, and especially when the contents of the auricles are propelled into them, as during systole, and sound ought to be produced during the one act, as well as during the other; but such is not the case: no audible sound is produced by the propulsion of the blood into the ventricles, and it is but fair to infer, that none is produced by its propulsion from them.

I pass to the consideration of the muscular sound, the *bruit musculaire*. It has always been the opinion of physiologists that the contraction of the muscular walls of the ventricles was either the sole cause, or an element in the production, of the first sound. Dr. Hope adopted the latter view, and it is generally entertained at the present day.

If you place your ear or a stethoscope over a muscle during its contraction, you will hear a sound, but in its character it differs entirely from the first sound of the heart. Perhaps you cannot have a better example of the sound produced by muscular contraction, than that afforded by the action of the masseter muscle. If, when your head is resting on a pillow, you forcibly contract your masseter muscle, you will hear a rumbling noise—a noise which continues during the contracted condition of the muscle, and is also heard during its relaxation. The exact cause of this sound I am unable to tell you. It may be due to the change in shape of the muscular fibres—it may be due to the alteration of the circulation—or to some other cause; but the more you examine it, and all other muscular sounds, the more will you be convinced, that they bear no resemblance to the first sound of the heart.

Before alluding to the experiment which some of you have witnessed, and which proves beyond all doubt that the contraction of the ventricles produces no sound, I think it right to bring under your notice other arguments which tend to prove the point. If the ventricles during contraction produced sound, it is but fair to infer that the auricles would do so. We find, however, that such is not the case. If it be said that the muscular substance of which the walls of these cavities are composed, is so slight, that no audible sound could be expected from its contraction, I maintain that such an argument is unsound, and I would ask, what is the exact amount of muscular fibre necessary to produce an audible sound? Are not the auricles of a full-grown man as large, and do they not contain as much muscular fibre, as the ventricles of a *fœtus in utero*?—and shall we admit that the contraction of the latter will produce the clear audible click, with which many of you are familiar, and deny that the former can have any such effect at all? Again, presuming that the auricular fibres in man are not sufficient in number to produce a sound, are there not animals which possess auricles larger than the ventricles of some adult men?—but yet, if you listen to the sounds produced by their hearts (as, for instance, the ox or the horse), you find that they are the same in number and character as those of the human being—during the auricular contraction no sound

is heard. These facts seem to me conclusive against the muscular theory, and to render it perfectly untenable.

We are not, however, without positive evidence of the truth of the assertion, that the ventricular contraction produces no sound. To Dr. Halford, who has lately brought the subject under the notice of the profession in London, and who has performed his experiments in this theatre, we are indebted for the beautiful experiment which some of you have witnessed.

The experiment consists in depriving an animal (dog or donkey) of sensation by means of chloroform; and, whilst artificial respiration is kept up, the anterior part of the thorax and pericardium are removed and the heart exposed; on listening to the heart, the two sounds are heard. For the remaining part of the experiment, I quote Dr. Halford's own words.

"The superior and inferior venæ cavæ, and the pulmonary veins, were now compressed between the fingers, and the heart continuing its action, a stethoscope was again applied, and neither first nor second sound was heard. After a short space of time, the veins were allowed to pour their contents into both sides of the heart, and both sounds were instantly reproduced. The veins were again compressed, and all sound extinguished, notwithstanding that the heart acted vigorously. Blood was again let in, and both sounds restored. All that is claimed for the above experiment, is its exemption from any rude interference with the mechanism of the heart's action. The cavities of the heart are untouched; there is no finger thrust into the auricle or ventricle; no hooking back of valves; in fact, not one source of sound substituted for another. Both sounds are destroyed and reproduced by the same means; the strongest argument for their both depending on the same cause, which is simply the backened current of blood, first against the auriculo-ventricular, and second against the ventriculo-arterial valves."

Now what is the value of this experiment? It proves unquestionably that there is no such thing as *bruit musculaire* in connection with the systole of the ventricles, and it disproves all the theories founded on a contrary supposition; it proves, moreover, that whenever the blood is allowed to play upon the valve, the sounds are produced.

Before Dr. Halford performed his experiments, in the original of which I assisted him, a very ingenious experiment had been performed by Mr. Brakyn, which consisted in propelling by means of bladders and tubes connected with the left side of the heart, air through the cavities, so as to represent the flow of the blood. His experiment proves that when the auriculo-ventricular and the ventriculo-arterial valves are thrown into a state of tension, by air acting on them in the same way as the blood, sonnd is produced. This experiment I have frequently repeated—the original apparatus used by Mr. Brakyn being still in my possession—and the sounds resemble in every respect, considering the nature of the fluid in which they are produced, those of the living heart.

These two experiments seem to me to settle entirely the question which has so long agitated the minds of physiologists. Mr. Brakyn's proves that the tension of the valves is equal to the production of the sounds, and Dr. Halford's that muscular contraction has nothing to do with them.

The pressure of the semilunar valves against the sides of the great vessels is said to assist the production of the first sound. This requires but slight consideration. Against what are they pressed? Against the *yielding* walls of the vessels, and can there be any element of sound in such an occurrence? I think not.

I think I have now proved that all the phenomena synchronous with the first sound, except the closure of the valves, are unequal to its production, or even to assist in it; and also, that such closure is equal to produce the effect. It is then to *the tension of the mitral and tricuspid valves, produced by the blood being forcibly propelled against them*, that this sound is due.

With regard to the second sound, there is but little difference of opinion; the experiments of Hope proved that it was solely due to the semilunar valves. When the arteries recoil after being distended by the ventricular systole, the blood in them is forced back towards the ventricles, the semilunar valves then come into play, they are stretched across the vessels, and suddenly made tense, and then sound is elicited.

If you listen to the sounds carefully, you will find that they do not differ in *kind*, but only in *degree*. The auriculo-ventricular valves are large, thick, and strong; consequently their vibrations are slow, and the sound they produce prolonged. On the other hand, the ventriculo-arterial valves are small, thin, and comparatively weak, and their vibrations are rapid, and the sound they produce short. Both sounds may be illustrated by making tense two pieces of membrane, of different size and thickness.

If the theories I have mentioned require any further confirmation, they receive it from the sounds which result when there is disease of the heart. If you hear a murmur, you know there is something wrong with the valves, you do not think of the muscular walls; you know there is some deposit in connexion with the valves, which either from its roughness causes a sound as the blood passes over it, or else prevents the valves properly closing, and thus allows of regurgitation.

Moreover, consider the alteration in the sounds, which is the result of a change in the muscular walls. When the ventricles are hypertrophied, the first sound is less distinct, and of a muffled character; it has to pass through the thickened muscle, and necessarily comes less sharply to the ear. Again, when there is dilatation of the ventricles and thinning of their walls, the sound is clear and sharp; it has to pass through a smaller space and is less altered in its character. If the sound were due to muscular contraction, surely, in obedience to the law of physics, that if you increase the cause you increase also the effect, the sound of a hypertrophied heart would be louder and more distinct than that of one in which the muscular fibres are diminished; but the contrary obtains, and this fact affords an additional proof of the valvular theory.—*British Med. Journal, Feb.* 14, 1857, *p.* 129.

21.—STIMULANT TREATMENT IN ACUTE PERICARDITIS.

The following case, recently discharged from King's College Hospital, will furnish a good example of Dr. Todd's usual plan of treatment in the inflammations of acute rheumatism.

A cachectic, pallid girl, of nervous temperament, was admitted on account of a mild attack of acute rheumatism. It was the first she had had. Alkalies were ordered, according to the usual plan, namely, fifteen grains of the bicarbonate, and five of the nitrate of potash, every four hours. On the third day a well-marked pericardial friction-sound was heard. Opium in grain-doses every four hours was now added to the alkaline treatment, and eight ounces of brandy daily were allowed. The symptoms of pericarditis rapidly became very severe. She had great pain; much dyspnœa; pulse 140; respirations often 60 in the minute. A week later pneumonia of the right lung set in. The brandy was now increased up to ℥xij., and ultimately to ℥xv., and in place of the alkaline mixture one containing ammonia and chloric ether was given. Two days later pneumonia of the left lung showed itself. On the left side the pneumonia became very extensive. Throughout this the friction-sound was heard over the entire heart, and was very loud. No head symptoms showed themselves. There had been in the outset a suspicion of an endocardial bruit, but if it existed it became so marked by the pericardial rubbing that it could not be detected, and had ceased before the latter disappeared. The patient, when the turn was once taken, made a rapid recovery. The pneumonic dulness entirely disappeared, and she left the Hospital to all appearance quite well at the end of a month. During a week of the worst her life had been in great and hourly peril. Throughout no remedies of an antiphlogistic class had been given, no leeches used, no blisters employed. The only form of counter-irritant applied was turpentine stupes, which, on the supervention of the pneumonia, were freely used. Our readers will, probably, agree with us in considering the above an example of very bold consistency. Dr. Todd is, perhaps, the most thorough-going of the revived Brunonian school connected with our London Hospitals. With regard to rheumatism in particular, we believe that he does not claim for the stimulant treatment any power of cutting short the inflammations, but that it prevents the patient from sinking under them, and enables him to convalesce much more rapidly than if depletion had been adopted. We have quoted the case as a fair illustration of the practice of one of our leading

consulting men, a most sagacious physician, and an accomplished physiologist. We do not venture to express either approval of its teaching, or dissent therefrom. The adoption of such practice by such a man does, however, prove one fact, which will be useful to the future historian of disease, viz., that during the middle of the nineteenth century diseases of acute inflammatory nature bore with impunity a treatment consisting of the most vigorous stimulation. Should, as there appears good reason to anticipate, the revolving cycle bring us in another quarter of a century to an opposite state of things, this fact will not be without its value.—*Med. Times and Gazette, Aug.* 29, 1857, *p.* 219.

DISEASES OF THE ORGANS OF RESPIRATION.

22.—ON CATARRH AND ITS TREATMENT.

By Dr. C. Handfield Jones, Physician to St. Mary's Hospital.

A point which I think is not yet sufficiently understood is the almost invariable tendency to aggravation of catarrhal disorders during the night. I have observed this in catarrhs of various parts. It is commonly supposed to depend upon the accumulation of mucus, but I believe it is rather due to a lowering of the nerve-power during the night, and consequent dilatation of arteries, the vaso-motor nerves partaking in the general debility. From this cause the hyperæmia of the affected part becomes increased, more irritation is set up, and more exudation takes place. There are many acts of a like import. Asthmatic paroxysms are apt to come on after an hour or two of sleep. Those of pertussis are aggravated often at night. Fever patients are apt to sink during the night. Epileptic attacks, when the disease is yielding, often happen only at night. Malaria affects the system much more severely at night than by day. When I have had cachectic pustules on my fingers from dissecting, I have often observed that they suppurated afresh at night, after they had appeared to be healing during the day. In a communication made by Mr. Clarke to Dr. Graves, it is stated that the electricity of the atmosphere is at its daily minimum at three A.M., and that the atmospheric pressure has one of its two daily minima an hour later. All these facts, especially when regarded in connexion with the manifest depressing influence which the catarrhal poison exerts on the nervous system at large, seem to me to give much probability to the opinion above expressed.

Causes.—Dr. Hyde Salter, in an able clinical lecture on Catarrh, adopts the old idea that cold is its principal cause, and considers that it operates by preventing the eliminative action of the cutaneous glands. I feel a very strong persuasion that this is far from generally true—that there is some other unperceived but real cause; and that when cold does occasion catarrh, it is not in the way Dr. Salter supposes. The following quotations afford evidence as to this point:—

Sir E. Parry states that though he and his crew were constantly in the habit, during a polar winter, for some months, of undergoing a change of from 80° to 100°, and in several instances 120° of temperature, in less than one minute, not a single inflammatory complaint (beyond a slight cold, which was cured by common care in a day or two) occurred during this particular period.

Alison, relating the effects of the cold on the French soldiers during the retreat of the army from Moscow, notices specially the benumbing of the mental faculties, the state of fatuity or idiocy into which they lapsed for hours before death, but never alludes to any occurrence of catarrh. It seems reasonable to conclude that there could not have been any prominent disorder of this kind.

A recent authoress, speaking of Lower Canada, where the winter lasts from December to April, and the thermometer is in January 35° below the freezing point, says that she has seen a wonderful effect produced, in the early stages of pulmonary disorders, by a removal from the damp, variable climate of Europe to the dry, bracing atmosphere of this country.

Dr. Granville writes: "It is a fact which will startle my readers, that 'a cold' is seldom to be heard of in St. Petersburgh. There are, seriously speaking, so few diseases of the chest, catarrhs, defluxions, and feverish colds in the Russian capital, that I was quite surprised on hearing consumption quoted as an almost endemic complaint."

"The Grand river (eastern fork of the Colorado) had to be crossed by swimming the cold flood, and by scrambling and leaping over blocks of ice. In spite of every such incident, of beds on the snow under the open heaven, and exposure to extreme severity of frost, snow-storms, and once a deluge of rain all night long, throughout this journey," says Mr. Carvelho, "I never took the slightest cold, either in my head or chest; I do not recollect ever sneezing. While at home, I was ever most susceptible to cold."

From these testimonies, it seems difficult not to conclude, that a considerable degree of cold, sufficient to check very materially the cutaneous circulation, does not exert any perceptible influence in promoting the occurrence of catarrh. Its tendency seems rather to be the reverse.

From questions which I put to some of my out-patients who were much exposed to the weather, it appeared, on the whole, to result that there was no remarkable liability to catarrh, unless they were much in the way of heat as well as of cold. The untoning, relaxing influence of heat on the nervous system seems to me the more essential of the agencies concerned in originating catarrh. When a system in this condition receives a sudden *coup* of cold, and does not react, the shivery feelings which ensue are an indication that the nervous system has received a depressing shock, and this may issue in some local affection or one more general. The reproduction of ague attacks, in those who have suffered from them, by exposure to cold, is quite an analogous case. Dr. Copland notices the converse as a not unfrequent occurrence, catarrh being induced by "coming into an over-heated apartment out of a cold and moist atmosphere." I have met with more than one instance of catarrhal affections being either originated or aggravated by the supervention of thaw upon a frost. In others, again, cold has interrupted improvement. This difference must be referred, I think, to the particular states of the patients—in the one the cold doing good by toning the vaso-motor nerves; in the others harm, by irritating the tissue. It seems to me very possible, that various causes operating after the manner of depressing poisons upon the nervous system, may give rise to the phenomena of catarrh. The principal, however, in all the more severe cases, is, I believe, the presence in the atmosphere of some malarious miasm, which, when general and potent, occasions an epidemic of influenza, but which in minor amount affects only the predisposed.

[Catarrhal affections are considered by Dr. Copland as analogous to rheumatism and erysipelas; probably, however, ague is more nearly allied to catarrh than is erysipelas.]

The relation of rheumatism to neuralgia is notorious. Instances continually occur in which it is impossible at first to say whether the disorder is pure or rheumatic neuralgia. Now, as catarrh is certainly closely allied to rheumatism, there is much reason to consider it equally allied to neuralgia, which, as Dr. M'Culloch well says, is another mode of malarious disease. The pain and general depression of a severe catarrhal attack manifestly indicate the operation of a poison on the nervous system, and the pains are, in fact, actually so many neuralgiæ.

If we suppose the morbid influence of catarrh affecting the mucous surfaces transferred to the vaso-motor nerves of the limbs and of the synovial membranes, we should certainly have results identical with those of rheumatism. The etymology, in fact, is correct, and cata*rrh* is a *rheum*atism of the mucous surfaces. Another point, in which catarrh has an evident affinity to neuralgia and aguish disorder, is that instances are not unfrequent in which attacks of neuralgic character are accompanied by exudation. Such are asthmatic paroxysms, passing off with free expectoration; lachrymation and salivation occurring with neuralgia of the trifacial; gastralgia, with its watery flux (pyrosis); sudden attacks of abdominal pain and diarrhœa taking place in some cases of remittent fever, and also as an independent affection; and certain cases of violent paroxysms of sneezing. Here the nerve disorder is temporary, and with it the vascular congestion subsides, and the exudation ceases. If it were more persistent, the result would be catarrh.

Treatment.—The treatment of catarrh is sufficiently rational and satisfactory. In cases where the local disorders are wanting, or nearly so, and the general depression and prostration, without much pyrexia, are the prominent phenomena, I find carbonate of ammonia, five grains, in cascarilla infusion, three or four times a day, of great service. In somewhat more pyrexial states, the ammonia is better

given in equal parts of camphor mixture and liquor acetatis ammoniæ. Tincture of hyosciamus, or tincture of cannabis indica, or (if there be diarrhœa) Battley's solution, may be added to the foregoing. Camphor and henbane, or morphia, or Dover's powder, may procure comfortable rest in many cases at night. As improvement goes on, citrate of iron and quinine, with tincture of nux vomica, or quinine alone, may be substituted for the ammonia. If in any case there should be much pyrexia, citrate of potash, with bicarbonate of potash, and dilute hydrocyanic acid, guarded also, perhaps, with a little Battley's solution, will be very appropriate. In many cases, rest in a warm bed for a day or two, with wine negus as a gentle stimulant, and equalizer of the circulation, will alone do very much to restore the system from its depression. There is no need for any rigid diet, nor for any attempts at elimination of the catarrhal poison.

In all local catarrhal affections, the general indications are the same—viz. in the early period, to reduce sthenic inflammatory action, (supposing it to exist,) and, in the later, to give tone to weakened vessels and nerves, and to calm irritation. In catarrh of the *air-passages*, ipecacuanha, half a grain to a grain, combined in a pill with one or two grains of extract of conium, and a little morphia, if there be much nervous irritation, and given every one or two hours, so as to maintain a degree of nausea for some time, is very effectual in combating sthenic inflammation. The saline and alkaline mixture, with hydrocyanic acid, mentioned above, should also be taken every three or four hours. There seems to me a decided advantage from giving the pill and mixture separately, as the nauseating influence of the ipecacuanha can thereby be regulated more easily, without interfering with the saline. Very decided cases of bronchitis may be conveniently dealt with in this way; some, however, occurring in the more vigorous and robust, may require the more potent influence of antimony. Mustard poultices or turpentine stupes, and in the later periods blisters, (if necessary,) may all be of much service. In cases of tracheal catarrh, where the cough is very distressing and obstinate, small blisters, applied just at the top of the sternum, are often of much avail. If there be much constitutional depression, together with the local catarrh, the skin cold, and the pulse feeble, ammonia, with the compound spirit of sulphuric ether, in cascarilla infusion, is very appropriate. Tincture of cannabis indica is a good sedative, which may be given with the above, or the extract in a pill at night; it certainly has a notable effect on the cough in not a few cases. In some cases of this character, there are symptoms of constriction of the air-tubes, (asthma,) to meet which liquor of the arsenite of potass may be added with advantage to the ammonia mixture, or extract of stramonium be given in a pill two or three times a day, or at night only. When the catarrhal affection is clearly asthenic, the râles moist, the expectoration free, and the pulse weak, the greatest benefit will accrue from the use of nervine tonics, as nitric acid, strychnine, quinine. With these, sedatives may be also employed, as well as cod-liver oil, to aid in improving the various nutrition processes. It is not unfrequently a cause of some perplexity to determine at the commencement of the treatment whether a tonic or contra-stimulant plan is to be adopted. Sometimes I believe only the result of a trial will show. Senega, preceded by an emetic, is most appropriate to cases of obstructive bronchitis, or, as it has been termed, suffocative catarrh. I have seen it turn the balance in a grave and most perilous case, when all other means had failed. Dry cupping is a most useful aid in chronic bronchial catarrh; it is more cleanly and convenient than mustard poultices, and the patient's attendants can soon be taught to do it themselves, if the practitioner cannot spare the time. The balsams and squill I regard as milder forms of nerve-toners, appropriate to cases where either the stronger tonics cause irritation of the tissue, or the morbid action remains at a grade intermediate between sthenic and asthenic inflammation. I cordially agree with Dr. Copland in his reprobation of the practice of maintaining a copious expectoration for an indefinite time, which the mere routine administration of these drugs is apt to keep up.

Though I have unfortunately a good deal of (personal) acquaintance with *nasal* catarrh, I must confess I do not know of anything that has much effect upon it during the stage of active defluxion, (tissue inflammation.) Dr. Watson, however, speaks positively of the good effects of an opiate, and I have seen inhalation of the fumes of opium also recommended. I suppose its action must be that of a tissue

sedative, somewhat as in peritonitis. When the flux is asthenic, though it may be most copious, I can answer for the good effects of bottled stout and strychnine, and the experience of others is to the same purpose. The *dry* plan of traetment (albeit I hold it in abhorrence) is by no means unscientific; it regards the need of diminishing the strain from within upon the weakened bloodvessels. I think it, however, better and pleasanter to try to tone them.

In *conjunctival* catarrh, even the most severe, the case is nearly the same as in nasal. We possess no contra-stimulant drug to be depended on for subduing the sthenic inflammation. We are, therefore, obliged to resort to direct means, as local bloodletting, and the application of nitrate of silver. The arrest of severe conjunctivitis by Mr. Guthrie's ten-grain ointment, or by the use of solid lunar caustic, is certainly a striking therapeutic effect, even if it cannot be relied on as a constant one. The exact mode of its action must remain uncertain, but I suppose we shall scarcely err if we consider it as a "vitality-moderating agent," to borrow an expression of Mr. Bennett's. On cutaneous inflammation it will often act similarly as stated by Mr. Higginbottom. When the sthenic period has passed, nerve tonics, (quinine, &c.,) have the best effects, as elsewhere.

In the treatment of *gastric* catarrh, I do not know that we have any contra-stimulant drug to be at all ranked with ipecacuan and antimony in their action upon the bronchial tubes. I think I have seen good from the administration of mercurials, as grey and Dover's powder, of each two grains and a half three times a day, for a few days; but I am not so clear about their good effects in gastric as in intestinal catarrh, where they are most marked. Leeches, followed by a continued poultice or fomentation to the epigastrium, will be of much benefit in the earlier periods, and a blister in the later. Lumps of ice, and a saline and alkaline mixture, with hydrocyanic acid every two or three hours, will be very grateful as long as there is active inflammatory movement. When this has quite, or nearly, passed by, tannin, in pills, with muriatic acid either alone, or conjoined with dilute hydrocyanic acid, forms an excellent tonic, and this again may be followed by the stronger ones, as quinine or strychnine. Bismuth appears to me to find its opportunity in the intermediate grades of inflammation, or those which contain a good deal of the neuralgic element. It certainly arrests pain and muco-watery profluvia, and seems to act, in part at least, as a nerve sedative. I have generally given it with soda or magnesia in mucilage, together with hydrocyanic acid. In many cases tannin may be given at the same time with bismuth, but I regard it as a grade nearer to the tonics. Nitrate of silver does not seem to me to belong properly to the remedies for gastric catarrh; it finds its exact opportunity in gastric hyperæsthesia. Lactic acid, or pepsine, with the meals, are of course to be recommended if there be any abiding debility of the stomach, and failure of digestive power after the above means have been fairly tried. Certain conditions of the stomach, by no means unfrequent at the present time, when there is pain and soreness, nausea, and rejection of muco-watery fluid, mingled sometimes with blood, and which are cured by quinine with opium, or citrate of iron and quinine with nux vomica, form a transition stage between catarrhal and neuralgic affections. I strongly suspect that cases allied to these, where there has been a good deal of bleeding, are often wrongly set down as gastric ulcer. I have little doubt that, especially in conditions of aguish disorder, when internal congestions are apt to occur, the mucous membrane of the stomach may bleed like that of the nose, without any ulceration. Perhaps this may apply to some of Dr. Brinton's observations.

I must notice, in passing, how unsatisfactory the term "dyspepsia," so often applied to all stomach ailments, is. It would be little more absurd if we denominated all pulmonary affections *dyspnœa*. Surely the existence of gastric catarrh, gastric neuralgia and hyperæsthesia, gastric degeneration, and gastric cancer, is perfectly established, and we ought to be able to refer every case to a position approximating more or less closely to one or other of the types just named. These ideas ought to be common and familiar, ought to be implanted in the minds of our students, and appear prominently in our text-books.

The treatment of catarrh of the *small intestine* is very similar to that of the stomach, but salines are generally to be avoided. Repeated small doses of grey and Dover's powders are of very great benefit; and if the urine is turbid with

lithates, carbonate of soda should be given in infusion of lemon or orange peel. As long as there is anything like tenderness, warm fomentations should be applied to the abdomen. In some cases repeated small doses of castor oil seem to modify beneficially the irritable state of the mucous surface; they should be given with a few drops of tincture of opium. Bismuth and tannin may be of much value after the earlier stage has passed away, and in protracted cases nitric acid and liquor of per-nitrate of iron are found efficacious.

Catarrh of the *large intestine* is identical with the milder forms of dysentery. Its treatment is remarkably similar to that of bronchial catarrh. Ipecacuanha frequently administered is of great avail in subduing the sthenic inflammatory state in each, and the asthenic is benefited by very much the same tonics.

The *bladder* is one of those regions of the body which seem to be less under the control of remedies than many others. Except bloodletting and opium, there seems to be no remedy known which has any effect in subduing sthenic inflammation of its mucous lining. Copaiba is often of great power in diminishing the secretion of muco-pus, and I have found benefit also from strychnia, in chronic cases, as a tonic to the relaxed vessels. But it is most difficult to arrest the morbid action completely, and, except in the young, where the vital powers are more elastic and capable of recovering themselves, I doubt whether it is to be done. The principles of action are, however, the same as in other catarrhal states.

In *uterine* catarrh there is rarely any opportunity for dealing with the stage of sthenic inflammation, and the task of the practitioner is mainly to give tone again to weakened, relaxed, and congested vessels. An occasional blister to the sacrum may be of much service, but reliance is chiefly to be placed on cold astringent injections effectually employed (vide Dr. Tyler Smith's directions, pp. 198–200 of his work), on the alum tampon, and on various astringents and nerve tonics administered internally. Dr. F. Churchill mentions ergot, tincture of muriate of iron, decoction of hæmatoxylum, and balsam copaiba, and to these may be added quinine and strychnia, which I have found of decided efficacy.

It may be thought that in thus reviewing the common catarrhal affections of the various mucous surfaces, and classing them all as catarrhal, I have merely used one term for another without any gain. I am, however, strongly of opinion that it is a real gain to be able to view diseases as far as possible as the result of general or wide-spread influences, which, operating on the whole frame, produce in similar tissues similar effects, and which are to be met and counteracted by similar means. The practitioner who regards disease in this light will surely be stronger, and better prepared for emergencies than he who considers them as so many separate entities. I have also desired to maintain and illustrate the view that the treatment of catarrh is to be directed simply to meet and obviate the effects of a depressing, or irritating poison, without in any way endeavouring after its elimination.—*Lancet, July 4 and* 11, 1857, *pp.* 3, 29.

23.—*Mixture of Tannin in Chronic Bronchitis.*—M. Berthel recommends the following mixture in cases of bronchitis of long standing:—Take of tannin, three grains; extract of belladonna, three quarters of a grain; extract of conium, two and a half grains; infusion of senna, three ounces; fennel water and syrup of marshmallow, of each one ounce and a half. Mix. A table-spoonful to be taken every two hours.—*Bulletin Général de Thérapeutique.—Dublin Hospital Gazette, Aug.* 15, 1857, *p.* 253.

24.—ON THE PROXIMATE CAUSE AND SPECIFIC REMEDY OF TUBERCULOSIS.

By Dr. John Francis Churchill.

[Out of thirty-four cases of phthisis, treated by Dr. Churchill, all either in the second or third stage of the complaint, nine recovered completely, eleven improved considerably, and fourteen died. He comes to the following conclusions:—]

The proximate cause, or at all events an essential condition of the tubercular diathesis, is the decrease in the system of the phosphorus which it contains in an oxygenizable state.

The specific remedy of the disease consists in the use of a preparation of phosphorus, uniting the two conditions of being in such a state that it may be directly assimilated, and at the same time at the lowest possible degree of oxydation.

The hypophosphites of soda and lime are the combinations which hitherto seem best to fulfil these two requisites. They may be given in doses varying from ten grains to one drachm in the twenty-four hours. The highest dose which I have been in the habit of giving to adults is twenty grains.

The effect of these salts upon the tubercular diathesis is immediate, all the general symptoms of the disease disappearing with a rapidity that is really marvellous.

If the pathological deposit produced by the dyscrasy is of recent formation, if softening has only just set in and does not proceed too rapidly, the tubercles are absorbed and disappear; when the deposit has existed for a certain time, when the softening has attained a certain degree, it sometimes continues in spite of the treatment, and the issue of the disease then depends upon the anatomical condition of the local lesion, on its extent, and upon the existence or non-existence of complications. I have made numerous attempts to modify the local condition of the lungs by the inhalation of different substances, but have never obtained any satisfactory result independent of what was to be attributed to the specific treatment. The hypophosphites of soda and lime are certain prophylactics against tubercular disease.

The physiological effects which I have observed to be produced by the use of the hypophosphites of soda, lime, potash, and ammonia, show these preparations to have a two-fold action. On the one hand they increase the principle, whatever that may be, which constitutes nervous force; and on the other, they are the most powerful of hæmatogens, being infinitely superior to all medicines of that class hitherto known. They seem to possess in the highest degree all the therapeutical properties formerly attributed by different observers to phosphorus itself, without any of the danger which attends the use of that substance, and which has caused it to be almost forgotten as a medicinal agent. The different preparations of hypophosphorous acid will undoubtedly occupy one of the most important places in the Materia Medica.—*Dublin Hospital Gazette, Aug.* 15, 1857, *p.* 252.

25.—ON THE DISEASE OF THE SHEFFIELD FILE-CUTTERS.

By Dr. John Charles Hall, Physician to the Sheffield Public Dispensary, &c.

[During the process of cutlery, the file is placed upon a bed of lead, which rests upon an anvil. This lead is gradually worn away, and may be collected in considerable quantities in the form of fine black powder. The file-cutters' disease results from the absorption of a portion of this lead, as is common to file-cutters, painters, lead-smelters, shot manufacturers, sheet-lead rollers, sugar-of-lead, red-lead, white-lead, and litharge workers, compositors, plumbers, potters, sealing-wax makers, enamellers of German cards, colour grinders, lead miners, &c.]

One of the most simple, and at the same time one of the most effectual means for preventing the attacks of poisoning from the employment of lead is the daily use of the bath, so as thoroughly to purify the skin, and remove from the surface of the body the particles of lead which have been collected during the day. If the file-cutters object to the daily use of the bath, then, on leaving work, the neck, face, hands, arms, and arm-pits, should be well washed with soap and warm water, and the shirt and clothes be changed, keeping one set for the house, and another for the workshop.

It was pointed out by the late Dr. Pereira, that the addition of four ounces of sulphate of potassium to thirty gallons of water much increases the efficiency of the warm bath; the sulphur of the alkaline salt combining with the lead which is present on the skin, or just below the surface, forms a dark discoloration. This is more particularly observed in the axilla, the abdomen, the inside of the thighs, the hands, and on the back. Such facts as these speak loudly in favour of the more general establishment of baths in every large town, for the use of the artisans who may be employed in it. Such public baths in Sheffield, to which our file-cutters

could resort, and where they could have baths in which the sulphate of potassium had been mixed, would, I am certain, confer most important benefits on hundreds of these men, prolonging, as it could not fail to do, their lives by removing in some degree at least the cause of lingering disease, attended as it often is for years by much discomfort and suffering.

The habitual costiveness to which the file-cutters are liable I have found best relieved by attention to diet, by the frequent use of injections, by the warm bath, by doses of sulphate of magnesia in the infusion of roses, and by taking now and then a pill consisting of the compound extract of colocynth and croton oil. Of the use of the iodide of potassium I shall speak in the next section.

Treatment of the file-cutters' disease.—I know of scarcely any subject in the whole range of medical science of greater interest, or one more deserving the most serious attention of the profession, than the examination of the chronic effects of lead on the human frame, and of which so remarkable an example is furnished in the file-cutters of Sheffield. In the treatment of this disease, our first efforts are to be directed to the expulsion of the poisonous metal from the system, and happily (since the publication of the memoir of M. Melsens, in which he has shown most clearly by numerous experiments, that the iodide of potassium is not only a safe, certain, and radical cure for the common forms of saturnine and mercurial poisoning, but an equally sure preventive of the injurious effects so frequently produced by emanations from lead and mercury) we have the means at our command; for I have no hesitation in stating that the iodide of potassium exerts far greater influence over the effects which arise from the poison of lead, and does more to the restoration of the body to a healthy condition than any other remedy, or combination of remedies, with which we are acquainted.

In the treatment of lead poisoning, we shall do well to keep in view the aphorism of M. Melsens, and to consider only two things, "the disease from the presence of the poison in the system, and the cure by the expulsion of this poison out of the system;" and the principle of treatment by the iodide of potassium is to render soluble any metallic compounds which have become fixed in the living body, and to facilitate their elimination by uniting them with a substance most readily cast out of the system. Melsens assumes that in all cases of *mercurial* and *saturnine* poisoning, the metallic substance is in actual union with the affected part or parts, and that it is retained there in the form of some insoluble compound. He considers that the iodide of potassium, after its absorption into the blood, combines with the metallic poison, and forms with it a new and soluble salt, freeing the poison from its union with the injured part; thus, as it seems, separating it from the damaged fibre, and once more setting it afloat in the circulation. M. Melsens having shown that the compounds formed by the union of mercury and its salts with certain of the tissues can be destroyed, and that the metal, on being dissolved by the iodide of potassium, can be eliminated through the kidneys, as proved by actual chemical evidence of the presence of mercury in the urine, goes on to speculate that the elimination of lead in the same way is rendered highly probable by the solubility of the saturnine salts and compounds in the iodide of potassium; and by the undoubted prophylactic and curative powers of the iodide of potassium in cases of impending or actual lead poisoning. It remained, however, for Dr. Parkes, in the first instance, and more recently for Dr. Sieveking, to demonstrate that in cases of saturnine paralysis the iodide of potassium does cause the elimination of lead. That it possesses this power any of the readers of this Journal may satisfy themselves by giving it in the next cases of paralysis from lead that may be under treatment. To demonstrate its effects, the urine must be first evaporated to dryness; the residue should then be boiled with nitro-hydrochloric acid and filtered. The filtered portion, on the addition either of sulphuretted hydrogen, or of sulphide of ammonium, will give a precipitate of the sulphuret of lead, if this metal be present.

In order to obtain the full advantages of the remedy, I think it most desirable first to give a brisk purgative and a large enema. When the iodide of potassium is administered, it is important that it should be taken fasting, in order to prevent decomposition by acids, and also that it should be given *largely diluted*. I have never given it in such large doses as M. Melsens suggests. Ten grains three times a day is the largest quantity I have yet employed. From the able transla-

tion of his memoir, by Dr. W. Budd, it will be seen that M. Melsens is of opinion that there is no evidence to show that sulphuric acid is an antidote to slow lead poisoning, but that sulphate of magnesia may be properly given in cases of poisoning by a soluble salt of lead, to act on the portion yet unabsorbed.

Although our efforts are to be directed to remove, as speedily as possible, the poison from the system, in treating the disease to which the file-cutters are so liable, certain complications will arise, requiring that means should at once be adopted for the relief of urgent sufferings; and it will often happen that in violent attacks of lead colic, opium, in some form or other, is indispensable, either alone or combined with calomel; frictions, with an opiate embrocation and injections of warm water also, are frequently useful in affording temporary relief. Obstinate constipation more generally yields to croton oil than to any other purgative. The warm bath is always of essential service. In cases of paralysis and "wrist drop," some adequate support must be afforded to the hand and arm, and electricity or galvanism may be applied to the paralysed limbs. I find, however, in actual practice, that in the different phases of the *file-cutter's disease* all other means yield in importance to full doses of the iodide of potassium, administered in the way which I have already pointed out.

The subject of *lead service pipes*, in connection with the supply of water to the houses of all classes of the community, is one of no little interest and importance; and one on which, did my present limits permit, a few remarks might not be out of place. That the day is not far distant when *lead*, as a means for the general distribution of water, will be abandoned, I feel certain. For my own part, being of opinion that it is, as a general rule, highly dangerous to bring water into contact with this metal, I hope that lead pipes will fall into general disuse; for why employ so dangerous a metal in any portion of the transit of water to our houses, when there exists in gutta-percha, porcelain, slate, zinc, and iron, substitutes which combine the advantages of durability and cheapness with perfect freedom from danger? The best means of purifying water from the contamination of lead is by filtering it through sand and animal charcoal.—*British Med. Journal*, *May* 9, 1857, *p.* 385.

26.—ON TRACHEOTOMY IN CROUP.

By Dr. C. T. Anjou, of Wadstena.

The operation of tracheotomy, which is attracting so much attention at the present day, and which is deservedly looked upon as the only means by which the last stage of croup can be successfully combated, is no new operation. In the latter half of the preceding century, it was recommended by Home, who stated that he had recourse to it in threatened suffocation, the consequence of angina or croup; it soon, however, was allowed to fall into oblivion.

Bretonneau was the first (1835) who performed this operation with successful result in the last stage of croup, and he has, in a most valuable memoir, laid down rules to be observed in its performance, which are so accurate as to be still of value.

Trousseau, the pupil of Bretonneau, endeavoured to gain increased credit for the operation, by recording numerous cases in which it was successfully performed, and by various improvements and modifications which he effected in the details of the operation, and by admirable treatises and statistical data, which he compiled.

Velpeau, Guersant, and other distinguished surgeons, enriched the statistics of tracheotomy by many successful cases, and caused an increased confidence in the operation by their endeavours to render it as simple and as easy as possible.

There are many children in Paris who have been tracheotomised for croup, and who owe their lives to these able surgeons. The statistics of cases in that city give nearly thirty per cent. of cures.

Although this result is far from unfavourable, yet the operation has found opponents, especially in England, where the cases in which it has been performed are not such as to induce imitation. Trousseau accounts for this by the supposition

that the operation has been too long postponed, that the adventitious membrane has extended too far, while at the same time the patient's strength has been brought too low. Dr. West, of London, is of the same opinion, although he seeks to make it appear probable that the disease presents different forms in the two countries. According to his opinion, in France the exudative process is chiefly limited to the upper part of the throat and trachea, while in England it extends more into the trachea and bronchial tubes; and, moreover, that complications of a severe character are more frequent. Although different epidemics of croup may unquestionably possess peculiarities of this nature, yet this improved hypothesis of West does not prove anything.

The cause of the untoward result appears to be partly that mentioned by Trousseau, and partly to arise from the addition of a less perfect and satisfactory mode of performing the operation.

In the "London Medical Times," March, 1853, Dr. Smith records three cases of croup in which he operated; the result was fatal in all. He employed a piece of caoutchouc catheter instead of the double canula, which we consider to be indispensable, and the result, therefore, is not such as to cause surprise.

In our own country the operation has also found gainsayers. One of our most distinguished writers, in a work on croup, thus expresses himself on the subject of tracheotomy:—"If the operation be looked upon as merely a palliative, then it is rational; but on this ground its general adoption cannot be recommended, for the advantages which it affords are too small. But when the idea is entertained of thus effecting a radical cure, if, as Michaelis, we would seek the means of extracting the false membrane from the trachea, or as Bretonneau, would destroy it by a solution of alum, or light application of caustic, then the whole proceeding must be held to be nothing else than an absolute absurdity." Experience, however, has shown the reverse. The child in the agony of suffocation, struggling with death, is often restored to life; and it is certain that we have frequently prolonged, by the operation, the life of a child whom we had looked upon as lost. Usually at the moment after the operation, a perfect respiration takes place, and the danger of suffocation is gone, at least for a time. Such aid is not to be despised. The pseudo-membranous exudations in the larynx and trachea can then be attacked and removed, and the inflammation may subside. Thus the seat of the disease is better brought under observation, and the physician has a fairer field for carrying out the measures which circumstances may demand.

The operation is in itself easy of performance; various difficulties may afterwards arise, which require the utmost circumspection and patience on the part of the physician. It stands to reason, that the earlier the operation is undertaken—or in other words, the more limited the extent of the false membrane, and the less the strength of the patient has been reduced—the greater is the prospect of a favourable issue.

As it is difficult to determine accurately the extent of the croupous exudation into the air tubes, the operation must be determined on under all circumstances where the fits of suffocation increase in severity, and the approach of asphyxia becomes more imminent.

Guersant lays particular stress upon the fact of the symptoms of suffocation being constant or transitory; in the latter case, when the fits of suffocation return after long intervals, he advises that the operation should not be determined on too quickly, but that we should be on our guard, and only resort to it in the utmost need. Admitting the value which these directions may possess, I again repeat, that the earlier the operation is performed, the more favourable is the prognosis.

It has been a subject of discussion, whether we should resort to tracheotomy or laryngo-tracheotomy; and they who favour the latter, do so on the grounds of the air-tube being here more superficial, consequently more easily reached; that we have to do with fewer veins; and that we do not run the risk of wounding the innominata or the left common carotid, which sometimes takes an irregular course and crosses the windpipe.

Trousseau prefers tracheotomy; he performed the operation more than one hundred times without having encountered anomalies of the vessels, and when we go to work cautiously, according to his method, we run no danger of injuring a large vessel, either artery or vein. He further supports his views by referring to the

probability of necrosis of the cartilage, to the greater danger of injurious consequences to the voice, from laryngo-tracheotomy, and finally, that in tracheotomy the windpipe is open at a point to which the false membrane may not as yet have reached, or where it has been latest formed, and thus a prospect exists, by suitable treatment, of preventing the further extension of the evil.

With respect to anatomical details, it is to be remembered that in tracheotomy, the lower the point where the trachea is to be opened, the deeper it is; and that at the upper edge of the manubrium sterni, it is crossed by the left vena innominata, and that in croup the soft parts may be swollen and infiltrated with serum or air.

Dr. Anjou then describes the operation, and the instruments which are necessary, all which he states he has borrowed from one of the latest works of Trousseau on tracheotomy. He then says, the directions of Trousseau with regard to tying the veins I hold to be superfluous, if, indeed, they be not dangerous. On the one hand, the operation (which is frequently undertaken when it is of the last importance that not a moment of time should be lost) is thus delayed, and on the other a dangerous phlebitis may be occasioned.

If the operator has incautiously injured one of the larger thyroids or the brachio-cephalic vein, it may be necessary that it should be secured even to prevent danger to life, before the operation is finished.

The accidents which may arise during or after the operation, besides hemorrhage, are next briefly alluded to.

If asphyxia should supervene, and respiration cease altogether, then the operation is to be brought to a close as quickly as possible, and the dilator introduced. Cold water should be sprinkled on the face and epigastrium, and pressure made alternately on the chest and abdomen; air may also be blown into the trachea, which is best done by introducing an elastic catheter into the canula, or if that be not at hand the operator may apply his mouth to the wound, and so bring about respiration. This must be done with caution, to avoid rupturing air-vesicles, and thus causing emphysema. If blood flows into the windpipe, the patient must be laid with the head downwards. Sometimes at the close of the operation, syncope occurs, and at the moment when respiration is free, and the congestion suddenly removed from the brain; in this case also the face should be sprinkled with cold water; some drops may also be allowed to trickle into the trachea. A feather may be introduced to excite the respiratory muscles, or a sponge at the end of a piece of whalebone, to separate the membrane, and facilitate the expulsion of the blood and mucus. In general the respiration becomes very tranquil after the operation; if this be not the case it is to be feared that the false membrane extends beyond the opening, or that fragments of blood coagula or membrane block up the passage; then there is no expedient except to keep the wound open by the dilator, and if possible remove the obstruction. Blood coagula or pieces of membrane are often expelled by dropping water into the trachea, by which cough is excited. Much more difficult is it to seize and draw out an adhering piece of membrane, which obstructs the trachea below the opening. Trousseau has, however, frequently succeeded with a small probang, a polypus forceps, &c., &c., in removing false membranes, which were thus fixed to the bronchi. Patience and perseverance are in all such cases essentially necessary. When the breathing becomes difficult, and there is reason to suppose that the obstacle is in the artificial passage, then the inner tube is to be removed and cleansed; this should be done every three hours, or oftener if necessary.

When, as frequently occurs, the wound, after some days, becomes covered with false membrane, it must be touched daily with caustic. The application of a caustic solution, by means of injection, to the larynx and trachea, was at first had recourse to in all cases of tracheotomy, but is now given up; there may, however, be cases in which the cautious application of caustic will be necessary, an example of which is afforded by the fourth case. Care must be taken that the air of the sick-chamber is pure, and that the temperature is moderate. A rule of great importance is, that after five or six days all drinks should be avoided, and the patient restricted as much as possible to solids. As it is of the utmost importance that the canula should be removed early, if the disease progresses favourably after *five or* six days, the opening of the canula should now and then be closed with the

finger, to compel the air to pass through the larynx. After repeated trials the artificial opening may be closed for a long time; until at length we may venture to remove the tube, and unite the edges of the wound with adhesive plaster. This should be done morning and evening, and after some days the wound will be perfectly healed.

Dr. Anjou next gives a lengthened history of five cases.—*Dublin Hospital Gazette, July* 1, 1857, *p.* 203.

27.—ON DR. FULLER'S DILATING TRACHEA TUBE.

Subjoined is a representation of the trachea tube exhibited by Dr. Fuller at the Medico-Chirurgical Society on Tuesday, the 26th May. It was constructed by Coxeter, of Grafton Street East, at Dr. Fuller's suggestion, according to the directions given in his paper on Tracheotomy and Croup. It consists of two tubes, an inner and an outer one. The inner tube is longer than the outer one, somewhat flattened from side to side, of uniform diameter throughout, and so constructed at its internal or inferior extremity that the direction of its internal orifice shall be at right angles to that of its external orifice. The outer tube is divided vertically and longitudinally into two blades, which do not make up a perfect tube, but are merely the flattened lateral portions of a tube, the upper and lower portions of which have been cut away. These blades are fastened at their outer extremity by a hinge, which admits of their inner or inferior extremity being brought together in a wedge-like form, in the same manner as the blades of a dilating bivalve speculum. When thus closed they can be introduced into the trachea through a very small incision, and then may be expanded without a moment's delay by merely pushing in the inner tube between them. A small screw is placed close to the joint, which by a few turns forms a stop, and effectually fixes them in their expanded position. As soon as they are thus fixed, the inner tube may be withdrawn, if necessary, for the purpose of cleansing, leaving the outer one in the position delineated in the second figure.

The peculiarities and advantages of Dr. Fuller's instrument over the tracheotomy tubes in common use are—

1st. *The uniformity of the diameter of the inner tube.*—This not only ensures uniformity in the force of the expiratory blast throughout the whole length of the tube, and thus renders obstruction far less probable, but it enables us to judge by the size of the outer orifice whether the calibre of the tube is capable of admitting a sufficient supply of air; a fact which it is impossible thus to ascertain when ordinary trachea tubes are used, inasmuch as they are tapered off, to a greater or less extent, according to the fancy of the surgeon or the instrument-maker.

2nd. *The direction of the internal orifice.*—This obviates all possibility of

obstruction arising by the tube being pushed against the posterior wall of the trachea, an accident which may readily occur with many of the trachea tubes in common use.

3rd. *The construction of the outer tube.*—This not only facilitates the introduction of the tube through the edges of the incision, but renders serious obstruction well nigh impossible, inasmuch as should the inner tube become obstructed, its withdrawal would at once open a free channel for the admission of air through the expanded blades of the outer tube.—*Med. Times and Gazette, June*, 13, 1857, *p.* 595.

DISEASES OF THE ORGANS OF DIGESTION.

28.—ON THE MANAGEMENT OF DIGESTION IN DISEASE.

By Dr. T. K. Chambers, Lecturer on the Practice of Medicine at St. Mary's Medical School, and Physician to the Hospital.

It is never too late to try and administer to the failing organ *the most potent of all medicines, the healthy human blood of the patient himself.*

The more I see of disease, the more convinced I have become that the most important function for us to pay attention to in all cases is the digestion; in chronic cases it outweighs all the other functions put together. I am led to this conclusion not so much by physiological reasonings, or by the important position of this function in the great circle of life, as by observation of the effects of remedies, prescribed perhaps with quite different views, and often without any thought of the digestion at all. The effect of climate, for instance, in consumption is proportioned with extreme accuracy to the degree in which the absorption of food is improved or injured by it. I had a striking instance of this shown two months ago in the comparison of letters which I received at the same time about two young ladies that I had sent to pass the winter in a warmer climate. The elder of the two (S. S—) was last year much the most advanced in disease; half of the right lung was rendered impervious to air and immovable by tubercle, local inflammations, hemorrhages, and pleural adhesions. She had also frequent dysmenorrhœa, and occasional menorrhagia. The younger (E. W—) had a small deposit of tubercle at the apex of the right lung, which excited cough, but no hæmoptysis or pleurisy. She was the stronger and most muscular of the two, and had least right to hereditary disposition, for her immediate family are alive, while S. S— has lost her mother by phthisis. Both had been under long courses of medicine by my direction, so I set them to begin the winter at any rate, and to go on as long as circumstances admitted, without any. What now is the result which I said struck me so forcibly? S. S—, the most diseased anatomically speaking, who had certainly the greatest amount of morbid tissue in her body, found the warm air assist her sluggish circulation, enable her to take exercise, improve the appetite, and add unwonted energy and spirits. No food was passed undigested, and the evacuation from the bowels was regular in time and quantity. The consequence of which condition of the assimilating organs, bowels and blood, has been a most decided amelioration of the pulmonary local symptoms, in spite of an intercurrent attack of hæmoptysis. There is scarce any pain, cough, or dyspnœa; she has increased in strength and weight, and boasts in her letter that she had one day ridden her pony five-and-twenty miles. E. W— had a tendency to a relaxed condition of the bowels—not absolute diarrhœa, but the passage once or twice a day of unformed pultaceous stools, containing a large quantity of undigested food. It was easy enough by medicines to prevent the motions being too frequent, but difficult to amend the assimilation of food. This diathesis seemed aggravated rather than improved in the mild climate; there was greater and greater inability to take exercise, then a return of pain and tenderness in the upper ribs, and at Christmas time the surgeon in attendance found a deposit of tubercle taking place at the apex of the left lung, in addition to what already existed in the right. Emaciation then commenced, and continuously progressed, quite unchecked by cod-liver oil and other expedients, which I thought it right should be tried, though without much expectation of success. In this patient my only hope is in a restoration of the digestive organs to a healthy state.

The remedy, the effect of which I thought was strikingly exemplified in this pair of cases accidentally reported together, is soft, warm air, in incipient consumption. The agreeable effects on the respiration, the relief of dyspnœa, the power of getting out in the open air, were equal in both, but how different has the result been!

These are not clinical lectures, so I will not systematically cite individual instances by name from those we have attended together, but a very moderate experience will soon enable you to class a dozen or more as resembling in their type one or the other of those above quoted. The atmosphere of our well-ventilated wards, and their even temperature in comparison with the depressing coldness and chilly damps of the streets whence our patients come, represents on a small scale what Torquay, Madeira, and Algiers are to the wealthy. And you may thus as students see what private practice will still more strongly impress upon you, that the effect of climate on digestion is the most important part of its action. The atmospheric change alone without medicine will benefit those who resemble the first class, more or less, in proportion to the extent of their disease, whilst the latter will usually grow worse in spite of drugs.

In all forms of dropsy, again, the effect which you desire to produce by remedies is strikingly dependent on the condition of the alimentary canal. Where the portal system is congested, I have given that strongest of drugs, elaterium, in doses gradually augmented up to three grains, without any of the vigorous hydragogue action naturally following; and then, by applying a few leeches to the anus, so as to disgorge the abdominal veins, half a grain has produced excessive purgation with reduction of the dropsy.

Amongst common diseases, another striking example of the dependence of the character of remedies upon their influence over the digestion is found in anæmia. If, as generally happens, iron can be got to improve the condition of the alimentary canal, so that the stools, from being scanty, scybalous, and mucous, consisting mainly of wind and semi-digested food, became natural and regular, then the body is renewed by fresh nutriment and the strength rapidly reinstated; but if it irritates the mucous membrane, so as to make the evacuation irregular, black, and slimy, your patient remains as anæmic as ever. Hence the importance of suiting to the case the different forms in which the metal is prepared. If its rapid solubility and exposure to the absorbing surface, so as to get a large quantity into the system, were the only thing to be considered, the question of which is the best preparation might be left to the druggist. But it is not so; very often the easily-soluble salts so disturb the gastric mucous membrane that it refuses to pour out that secretion which is the chief solvent of albumen; the food passes unaltered into the intestines, and putrifying there, increases the disease. Whereas a sparingly soluble form of the medicament passes unaltered through the stomach, and exerts its main energy on the intestines. Again, some preparations, both soluble and insoluble, are more or less astringent, and have various qualities acting on various parts of the alimentary canal, which render them appropriate or not to individual cases.

It ought to be better understood that the fitness of any substance ingested, whether food or medicine, for its final destination, is not the only thing to be considered. Its capacity for entering into the circulation must be taken into account, and, above all, its dynamic influence over the organs of absorption and digestion. As a general rule, iron is the chief agent we think of in anæmia. We think of it for its direct power of increasing the hæmatin of the blood. Yet it is by no means always the first, or even the best, remedy when the blood-discs are deficient from faulty assimilation. I remember when I was a student noting down as a paradox that salts and senna acted as a tonic in three cases running, where iron and bark and bitters had done no good; yet that I could not find in any work a tonic action assigned to purgatives. I then saw that the use of medicines was not entirely according to their rating in our books.

The fact is, that until you have removed the sluggish state of the portal circulation, which does nothing but secrete mucus and obstruct absorption, you cannot get the protein compounds taken up, and they form a much more important constituent of blood globules than even iron.

And it is not only the general health that is benefited by attending to the functions of the stomach, but even organs as far as possible removed from it in a

physiological point of view. A patient consults me from time to time who has an enlarged prostate. When digesting well, his urine is quite clear, and free from mucus, even when microscopically examined; but if the stomach is disturbed by any imprudence or accidental illness, there is a copious formation of pus in the bladder.

I shall return to this subject when I come to speak of medicine separately; now I mention it merely as an accessible instance to show you how all-important in treating chronic disease is the condition of the alimentary canal.

In acute disease, too, you will be almost equally disappointed with the effects of your remedies, if you do not, either by their means, or by other means in addition to their administration, bring the alimentary canal into a proper state for their reception. In no cases is this more marked than in erysipelas and delirium tremens, and, therefore, you may have observed that I scarcely ever pass a bed in the wards containing a patient affected with one of these diseases without calling your attention to the fact. I point out to you that cinchona and wine are the proper remedies for the weak rapid pulse, the yellow pasty tongue, and the low inflammation of the skin in erysipelas; but that if you give these remedies without clearing away the suburral epithelium from the stomach and bowels, they are quite thrown away; the circulation continues as weak as ever, and the patient goes on advancing towards death. But if you have got a purgative to act, and are then in time with your alcoholic stimulants and bark, the corner is turned, and every change is towards health. I have often shown you, in the little ward where we put raving cases of delirium tremens, a man who has been taking large amounts of laudanum, morphia, and solid opium, yet is as rabid and demon-haunted as ever, his eyes never closing to the horrible visions that surround him. But on giving him an efficient dose of salts-and-senna by mouth or rectum, these powerful opiates become no longer requisite; he goes off into a quiet sleep, sometimes without any more, sometimes with an ordinary quantity of laudanum, and the next day he is usually calm enough to be removed to the common wards.

Now, do not misunderstand me, or suppose me to have turned "purgative-doctor," recommending an artificial diarrhœa as a panacea; on the contrary, I am anxious to warn you that there are acute cases where a purged state of the alimentary canal, natural or artificial, is most injurious. I would instance especially pneumonia and low fever. In the first, tartar emetic and cupping are beneficial just in proportion as the bowels are not purged; and if you give a cathartic, you very often destroy all the good effect of your remedies. In adynamic fevers, the prognosis may be almost entirely governed by the average proportion of solid matter to the liquid in the stools, and by the degree of digestion of food. Any experiments which increase the amount of solid and diminish the liquid intestinal evacuations, any which promote the taking up of nutriment by the mucous membrane, are doing good; any that act in a contrary way, do harm.

In pneumonia and low fevers, three-quarters of those who die, die of starvation. I mean that the real immediate cause of their death is the non-renewal of the blood by the supply of fresh matter. Both veins and arteries are filled with a dark, half-dead fluid, a great portion of which is incapable of fulfilling the functions of life at all. Expose this black blood to the air and it remains nearly as black as ever. No oxygen will redden it, for it is too dead to imbibe oxygen, and it is only fit to be evacuated. But, then, when it is evacuated, something must supply its place; new blood discs capable of living and absorbing oxygen must be made, or the patient dies. Now, if you think only of getting rid of this dead matter by blood-letting and other evacuants, or if you think only of arresting the rapid destruction of the still living matter by alcohol, you are taking an imperfect view of your duties, and not doing all that may be done to rescue the patient. At the same time that you fulfil the other indications, it is your business to adopt expedients for promoting the supply of nutriment to the absorbents.

That is not to be accomplished by throwing in a large quantity at once, which decomposes and stops digestion before it can be digested. The alimentary canal either rejects or suffers from such treatment, and is all the more starved by the very abundance, like the Roman girl in Livy's legend, who was crushed to death by the stipulated rewards of her treachery.

The way to attain your object is to give a very small quantity at a time and

very frequently, so that a continuous flow may be kept up through the alimentary canal without over-burdening it. The system of a patient laid up with acute disease is like that of a new-born infant, in the weak hold it has of life, and in the constant support it requires; and the stomachs of the two resemble one another in the insufficiency of the meal they can take at once to satisfy their wants for the time usual with adults. Treat them, therefore, in the same way; and as in proportion to its youth you order an infant to be fed frequently, so in proportion to their illness feed frequently your sick patients. A person prostrated by a fever, or by inflammation of an important vital organ, such as the lungs, for example, ought not to be more than two hours without food while awake, and I have not unfrequently administered it in doses of a few spoonfuls every hour, night and day, with decided advantage.

You may take a lesson, too, from the nursing of infants as respects the nature of the food: milk is the most perfect you can give. The only disadvantage is, that the caseine may be suddenly coagulated all at once in the stomach, and then, instead of passing on gradually, it has to remain there till enough gastric juice is secreted to dissolve it, and enough energy exist in the peristaltic muscles to move the mass onwards; till which time it stops the way. The better plan, therefore, is to mix sufficient lime-water with it, to prevent any large quantity of lactic acid being free; much of the milk will then pass the pylorus uncoagulated, or at any rate in very small coagula, and be digested by the intestinal juice, with no labour to the stomach.

[Healthy digestion is characterized by being easy, quick, and complete, but the digestion of ill health is painful, slow and defective.]

In the first stage of digestion we may notice, as common phenomena, those generally known by the following names:—Heartburn; Acidity; Weight; Tightness or distension; Oppression; Wearing or boring pain; Cramp or spasm; Eructations; Vomiting.

Heartburn.—A sensation as of extreme heat at the cardiac orifice of the stomach, running at intervals up the course of the œsophagus.

From the effects which alkalies have in relieving temporarily this discomfort, there seems no doubt that it arises from the action of the acid contents of the stomach on the cardiac and œsophageal nerves. *The gastric mucous membrane itself does not suffer from acids;* it secretes them, and bears them in contact for the remainder of the day without inconvenience. The gullet, too, will bear them *for a short time*, swallowing a mouthful of sour victuals or drink gives a healthy man no immediate inconvenience; but a *continued* exposure becomes painful in close proportion to its length, as may be easily tried by pouring down such articles slowly and continuously for a few minutes, whereby a pain will be produced even in the most healthy.

Heartburn, or pain from the action of acids on the cardiac end of the œsophageal plexus, may arise in three ways:—

1st. By over-sensitiveness of the nerves;

2nd. By too long exposure to the acids of digestion;

3rd. By too much acid being formed.

(1st.) *By over-sensitiveness of these nerves* (=Over-feeling=Hyperæsthesis). This is sometimes, but not always, accompanied by over-sensitiveness in other parts of the body, and is the form of heartburn which weak, nervous, hysterical persons suffer from. It comes on almost immediately after eating, directly the contents of the stomach have begun to assume that degree of acidity which is natural and necessary to them. If vomiting does not occur, it continues till they have become neutralized either by the saliva which usually flows abundantly down the œsophagus, or by taking some alkali, or by the moving on of the mass towards the pylorus.

The worst of this neutralization, natural or artificial, is, that a good deal of the albuminoid food remains undigested. It is absolutely requisite for its solution by the gastric juice that it should be acid while in the stomach; and if this natural acidity is prevented, because it happens to be painful to the over-sensitive nerves, the peptic solvent cannot act. Thus, the digestion, from being painful, is made defective also.

A peculiarity of heartburn from over-sensitiveness, which often is a great assis-

tance to the diagnosis, is, that one kind of food brings it on as much as another; just in the same way as the peculiar grinding pain of gastric ulcer (which will be spoken of in a future lecture) is frequently to be distinguished by there being so little difference felt between various articles of diet. It is to be observed, also, that it is very often worse after the early than after the later meals, even though the dietary should be more sparing and more digestible. Indeed, in private practice, where one sees lighter diseases than those in the wards, I have notes of several patients who have eaten dinners and suppers without distress, but who invariably suffered after breakfast.

This form of heartburn usually occurs in nervous, sensitive persons, whether their state of system is congenital, or induced by external circumstances. Any morbid or extraordinary condition of the parts supplied by the abdominal plexuses of sympathetic nerves often brings it on. Tumours of the uterus or pregnancy are a very common cause, and excessive or painful menstruation often induces it in the female; and in the male, I have known it produced by piles and by mere constipation. It not unfrequently is accompanied by vomiting in persons who have a tendency thereto. And in these cases you have an opportunity of examining the contents of the stomach, and confirming what I stated about their being in a normal condition, by no means over acid or otherwise unnatural.

Over anxiety, watching, harassing mental emotions, and in short, all external circumstances which bring on over-sensitiveness in general, induce this state of digestion. Local pressure on the epigastrium will also often fix the disorder in that part. It is curious that while the ordinary nerves of feeling appear blunted by pressure and the frequent repetition of excitement, the sympathetic should be made in the same way more sensitive. Such, however, appears to be the case with the epigastric plexus, from the frequency with which this form of heartburn occurs in shoemakers, needlewomen, clerks, and others whose ordinary occupations involve pressure on the pit of the stomach.

As anæmia, debility, and occupations which occasion them induce this heartburn, so it, too, will react, and increase them, or even bring them on. An impoverished stomach, thus unable to bear the labour of digestion, becomes poorer still from defective supply. That happens in the human body which Martial complains of as one of the vices of civilization—those most in want gather least wealth—

"Dantur opes nulli nunc nisi divitibus."

But at the same time a slight change of habits, or slight relief from medicine, will equally react beneficially, and commence a march towards health with unexpected rapidity.

It will also, too, be sometimes associated with, and very much aggravate, the intermittent headache of marsh miasma, causing "brow-ague" to commence after the midday meal, instead of at other times.

The suddenness with which it will come on, and the rapidity with which it often goes away, is a great help to the diagnosis of the nervous origin of this heartburn, and is also a great encouragement to the physician to promise relief to the sufferer.

The sketch I have given of the physiology of this disorder, points out the treatment most likely to be successful in the end. The aim must be, not to neutralize the acid, but to blunt the over-sensitiveness of the nerves. This can be done, first, *directly*, but temporarily, by medicines known, experimentally, to have that effect on sensitive nerves; secondly, *indirectly*, by strengthening the whole system, so that those nerves along with it may become hardier to bear the brunt of their necessary duties.

You have seen me, therefore, in the wards, begin the treatment with hydrocyanic acid and bismuth, and in a few days commence the use of steel, or valerian, or quinine. The benefit found from the first-named drugs is decided indeed, but it is temporary, and few cases will get permanently well without they are followed up by the tonics. At the same time there is a great advantage, still greater in private than in hospital practice, in commencing with a medicine whose influence is immediate, and which will gain the confidence of your patient for any future plan you may adopt.

Where brow-ague, or any other form of neuralgia, is concomitant or consequent,

you will best treat it by four or five grains of quinine, taken an hour and a half before the meal after which it comes on—that is to say, in most instances, the midday meal. I have found this treatment of neuralgia more effective than iron, curing not only more certainly, but more rapidly.

Sponging the body with cold sea-water, and the shower-bath, are often most useful remedies, acting doubtless through the general system in a great measure. But cold sponging or douching the epigastrium, which may be easily managed sitting in a hip-bath, appears to have a special local action, and certainly does still more good.

The tonics which must follow up this special treatment may be varied according to the case and the patient's convenience; but, as a general rule, I find none do better than iron.

(2nd.) *By too long exposure to the acids of digestion.*—Many influences, which in moderation are rather pleasant than otherwise to the sensory nerves, become exquisitely painful when long continued. For example, the immersion of a limb in water, a few degrees below the temperature of the air, is not disagreeable, and may be kept on with intermissions for any length of time; but becomes absolute torture if persisted in without an interval of rest. So, in many cases, a sluggish stomach, in which the progress of digestion is too slow, causes the cardiac orifice to be so long steeped with acid that it becomes painful, though a proper exposure for the natural length of time could be borne with ease. Just in the same way, a continued dribbling of fæces will make the anus sore—a continual running from the nose excoriate the nares.

This form of heartburn never, like the first, comes on immediately after eating. It often does not occur till four or more hours are passed—in fact, till the period at which the stomach ought to be nearly empty, and preparing for another meal. But the most usual time is an hour after food. Its long continuance will, however, be apt to induce that tenderness of nerves which constitutes the first form, so that it will approach nearer and nearer to the time of meals, till at last it commences immediately. It differs, though, invariably, in one important diagnostic peculiarity, that it is more common after the later than the earlier meals. It will also, like the first form, bring on nervous headache, and occasionally a decided intermittent neuralgia, aggravated by the same causes, and removable by the same remedies, as that arising from marsh miasma. Even if the meal should be omitted, this headache will still come on; but if the *time of the meal be changed*, the time of the headache will change with it.

Though the œsophagus is relaxed so as to admit of some regurgitation, yet what comes up is seldom more than air, usually of a neutral, inoffensive character, and not in the great quantities and with the explosive force which marks the formation of carbonic acid by fermentation in the stomach.

The persons in whom it occurs are active men of business, literary labourers, clerks, over-thoughtful and over-careful. But when once acquired, it is very apt to persist in spite of a change in the mode of life. I have had as patients thus affected many farmers and country gentlemen who had suffered since youth, though living with little apparent care or intellectual occupation.

As before mentioned, it may lead to the first form of heartburn; but in symptoms, pathology, and treatment, it may be considered as a transition from it to the next in order. And I will, therefore, postpone speaking of the indications it affords till I have brought before you the heartburn which arises—

(3rdly.) *By too much acid being formed.*—To this the name of "Acidity" is applied with propriety, because there really is an excess. It comes on at a period more distant from the time of meals than the last kind, and may be considered, in some respects, as a further stage of it. The pain, however, is much less intense in general, sometimes so slight as to cause scarce any inconvenience. But the regurgitations are much greater; sometimes true vomiting occurs, distinguished by spasmodic action of the diaphragm; sometimes only a teaspoonful of intensely sour liquid comes up, roughening the teeth and bringing tears into the eyes; sometimes a gaseous acid (acetic and butyric) is belched up spasmodically; sometimes it oozes up gradually, and its presence is shown by the saliva and breath being sour to the taste and smell.

These peculiarities will suffice to distinguish between "acidity" or heartburn

from real excess of acid, and those forms previously named where the excess is only apparent. A further test may be found in the action of remedies: a small dose of alkali, a grain or two of soda or potash, will be sufficient to appease them; whereas, in this case, a very considerable dose is required.

Acidity is often misunderstood. I have heard it spoken of as "an excess of gastric juice," "excess of action in the stomach"—that is to say, too much of a vital act, too much life. Such a mode of speaking, if it lead to anything, must lead to faulty thinking and bad treatment.

Instead of being an excess of gastric juice, it is itself a proof of deficiency. You may prove by experiments on artificial digestion, that an increase in the quantity of the solvent secretion quickens the solution of albumen. You will find, for instance, that the amount of pepsin contained in twenty grains of Boudault's powders will dissolve a piece of hard-boiled white of egg much sooner than five grains. The same thing would of course happen in the stomach; were there more gastric juice there would be quicker digestion. But in "acidity," such is notoriously not the case; the aliments lie for a long time in the upper part of the digestive canal, and often are, after all, passed undissolved in the fæces. It is a chemical act of decomposition directly opposed to the vital act of digestion.

I call a "vital" act any which forms part of the great circle of life, such as is the conversion in the stomach of albumen incapable of solution and absorption into peptone capable of entering the circulation. Now, when this vital act of conversion is carried on with rapidity by a stomach making copious gastric juice strong in pepsin, then chemical decomposition is prevented; nay, it is even arrested after it has commenced, as may be seen by putrid meat not becoming more but less putrid as it passes through the body of a healthy animal. But when the conversion is slowly or imperfectly performed, then chemical change has time to take place, and does so very soon, being favoured by the heat, moisture, and animal matter in a state of change. If the food remain too long without becoming chyme, the protein compounds putrify with extreme rapidity under such circumstances.

Compare this white of egg, which has been immersed in saliva at the temperature of 100° Fahr. for twenty hours, with another portion from the same egg kept the same time in distilled water. Your nose warns you of the difference directly; the first is intolerably fetid, the second quite sweet.

Exactly similar is the fate of undigested albuminoid matter, whether animal or vegetable, in contact with the mucous membranes inside the body. But how does that affect the case of acidity? Thus: I have in this beaker some syrup of grape sugar, quite neutral and natural. Here is some of the same which has been poured on a piece of putrifying albumen a few hours ago, and kept at the temperature of the body. You see that a piece of litmus paper I put in it is strongly reddened, showing the copious formation of lactic acid. In another beaker, the formation of butyric acid from fresh butter by the same means is shown to you.

Just so all the grape sugar and fat swallowed, when it meets in the stomach or intestines with decomposing animal food, remaining in a mass or glued to the side by a too-sticky mucus, ferments quickly throughout, and forms lactic and butyric acids in great quantity.

Remember, the grape sugar *swallowed* means something much more important than merely the grape sugar *eaten*. See this boiled starch; I heat some of it with the potassio-tartrate of copper, and there is no change in the blue colour of the salt. Now I put some in my mouth, and hold it less than a minute. See! when it is again heated with potassio-tartrate of copper, the metal is precipitated, and shows by its brilliant yellow colour an abundant quantity of sugar. The saliva, you see, *begins* to convert starch into sugar *immediately;* very soon it will transform the whole mass. A mouthful of boiled starch which I held in my mouth for five minutes the other day, showed afterwards scarce a trace of starch remaining. As, even amongst meat-eating nations from half to five-sixths of the solid food consists of starch, it is evident that one of the most bulky contents of the stomach must be the sugar which has been made by the saliva out of amylaceous food. Here then is ample material for the formation of lactic acid to almost any amount. Add to this the oleaginous substances which it is impossible to avoid in any diet, and which, from being insoluble in water, constitute a peculiarly acrid and concentrated acid, and you will have no difficulty in accounting for acidity, without

recurring to a theoretical excess of gastric juice. Acidity then is an evidence of chemical, and therefore of decreased, vital action, a proof of incomplete digestion, of deficient activity in the stomach.

On this rests the *rationale* of the hints for treatment which it gives. The way to cure it *temporarily* is to neutralize by alkalies the excess of acid which is formed. And this may be freely done without fear of bad consequences; for you are not likely by any reasonable dose to make it so far alkaline as to interfere with digestion. It is not in this form, where acid is really in excess, but in the first (or nervous) heartburn that alkalies do harm, for the reasons there stated. Where it arises simply from the temporary debility induced by occasional gluttony, "the remorse of a guilty stomach," it may be left to cure itself. But a *permanent* cure can only be brought about by re-agents which—

1st. Strengthen the local power of the gastric solvent;

2nd. Augment its quantity;

3rd. Excite the peristaltic motions.

The local power of the pepsin secreted, although in diminished quantity, may be much increased by neutralizing the saliva swallowed and collected in the stomach and œsophagus just before the meal. In laboratory experiments on artificial digestion, you will find that saliva arrests the solvent action of pepsin in a close proportion to its amount. In the laboratory you may set the action at work again by acidifying the mixture, unless you have waited so long as to allow it to decompose. So, too, in the stomach, if you take it in time, you may free the pepsin from the alkaline saliva, and enable it to do its duty by adding acids. The best to select are those to which the viscera are most used, hydrochloric or lactic. A few drops of these taken immediately before meals will almost always have a beneficial effect.

The quantity of the gastric juice may be increased by supplying one of its most important constituents, water; but in large quantity at the meal it is apt to dilute too much the sparing secretion, and hence it is better to direct the principal draughts to be taken half an hour afterwards. An artificial gastric juice, in the shape of one of the new preparations of pepsin, may also be given if the acids are not sufficient; but I prefer to try at first and make the patient his own secretor. The colder the water the better; for the low temperatnre acts as a tonic shower-bath to the local nerves, and removes the congestion of the blood-vessels, while at the same time it never quite stops digestion, and soon acquires heat enough to let it go on with full rapidity.

Your patient will perhaps think that you are blowing hot and cold, or rendering inert your own treatment, by ordering acid at one time and alkalies at another; so you will find it a wise plan to give him a little physiological lecture on the subject, explaining the reason of your conduct. You may explain also that the acids given as medicine do something more than in the laboratory: they stimulate the mucous membrane, and so actually increase the quantity of secretion while they increase its power. You need not have the fear, which I have heard some express, that the use of these substitutes for the natural constituents of the gastric juice, or rather the supply of that which ought to exist in the gastric juice, will make the stomach lazy—as doing a servant's work for him makes him less equal to doing it himself. On the contrary, the new vigour put into the system by the healthier and more copious chyme that is formed, makes the organ more active; so that it soon is enabled to go on secreting itself what is wanted, and to do without the artificial substitute. But do not, therefore, let patients fancy that they shall get into a habit of taking medicines, so as to be obliged to continue or to increase the dose. If they derive benefit therefrom, they will be able soon to leave them off.

The action of the peristaltic muscles of the stomach can be excited by most of the drugs which act as purgatives. But unfortunately, in the great majority of gastric complaints, purgatives are decidedly injurious, so that the good done to the stomach is overbalanced by the injury done elsewhere. The least hurtful are rhubarb and aloes; but even they somewhat impede the digestion in many persons who take them as a dinner pill. A better expedient is strychnine. Its small bulk causes it to be quickly absorbed, and to act locally on the stomach alone without affecting the rest of the system; so that where common caution is observed, I have never known it obliged to be left off on account of its specific spasmodic effects; at

the same time its beneficial influence is most marked, and in many instances it acts as a bitter tonic also, increasing the appetite and spirits.—*Lancet, June* 13, *and July* 11, 1857, *pp.* 597, 25.

29.—ON ERUCTATION AND VOMITING.

By Dr. T. K. Chambers, Physician to St. Mary's Hospital.

[The morbid states of which eructation is a phenomenon naturally divide themselves into three groups. 1. Where there is simply a relaxed œsophagus. 2. Where there is an increased quantity of atmospheric air swallowed; and 3. Where foreign gases are swallowed from chemical decomposition.]

The indications of treatment afforded by eructation, are different in the three groups of cases in which it occurs. In the *first*, antacids are often sufficient for temporary relief. Four grains of rhubarb-pill, with a grain of gallic acid, taken before dinner, is still more useful, for the tone thus given to the mucous membrane prevents the recurrence of the inconvenience. In more severe cases I have found a rhubarb draught with gallic acid, taken three times a day, a very efficient remedy.

In the *second* group, where excess of air is swallowed, valerian and ammonia are very beneficial. Where there is nausea or vomiting, the valerianate of zinc may take their place; but it is not so certain as the infusion or tincture of the herb. Where this fails, use strychnine, which you have seen in the wards to be the most powerful agent we have to steady irregular nervous action, as hysteria, chorea, &c.

In the *third* group, the great object must be to prevent decomposition. In the laboratory you find that no agent is so powerful in this respect as sulphurous acid; and, accordingly, it is much used in various processes of the arts for the purpose. Sulphur is often burnt in casks to arrest the fermentation which is apt to be going on in the liquids soaked up by the cracks or porous parts of the wood, and the sulphurous acid vapours effectually do their duty. The Board of Health, so well represented in this parish by my accomplished colleague, Dr. Sanderson, finds no disinfectant for fetid sewers so instantaneous in its action as Macdougal's, the chief ingredient in which is sulphite of lime. Meat may be prepared on the same principle, and keeps as well as when salted or dried; and you may test, even on such a delicate substance as yelk of egg, how fresh it keeps with any sulphite salt. The same effect is produced by taking as a medicine hyposulphite of soda; the fermentation of the contents of the stomach is arrested, and the evil effects of that fermentation prevented.

Another powerful arrester of chemical change is charcoal. When soup has begun to turn sour in hot weather, clever cooks boil it again with a little bag of charcoal in it, and it becomes quite sweet. The same agent will prevent decomposition in the alimentary canal. I have used it, I must say, only in cases where the decomposition occurs in the intestines, producing flatulence; but I should not hesitate to employ it in gastric fermentation also, if hyposulphite of soda chanced to disagree or was not beneficial.

Vomiting seems less than any of the phenomena previously discussed dependent upon the peculiar condition of the stomach, and more upon the idiosyncrasy of the individual. There are those, who, whatever may be the matter with them, never vomit; whilst others do so on the slightest occasion. Even pleasant associations will, in some people, bring on this most unpleasant consequence: a patient of mine, a healthy young lady, is frequently seized with retching on entering a ball-room where she expects an agreeable evening; whilst it never happens in going to a stupid party. On the other hand, I have had patients with cancer of the stomach, and others with various sorts of severe dyspepsia, who could take the most nauseating drugs without inconvenience. The mere fact of vomiting, therefore, affords in itself no clue to the local condition of the stomach. But the time of its occurrence, the circumstances which increase it, and the nature of the matters thrown up, may be most suggestive to the practitioner.

Vomiting which occurs when the stomach is empty, or which, though it occurs at other times, is most frequent and distressing then, may be safely set down as *arising not* from any fault of the viscera itself. Such is the morning vomiting

frequent in pregnant women, in cases of diseased heart, of abdominal tumour, and sometimes of pulmonary consumption. This is no doubt a reflex action of the vagus nerve excited by the irregular irritation of some of its branches; and on the same principle I can easily understand the more rare cases where vomiting has been caused by foreign bodies in the ear or nose, by tumours in the neck, &c.

When vomiting occurs with a replenished stomach, it may be considered as a general rule that the smaller the quantity of food which produces it, and the sooner it takes place after eating, the nearer to the mouth is the seat of injury. Disease of the œsophagus causes rejection of the food before it has got down; of the cardia, or smaller curvature, very soon after it has got down; and disease of the pylorus or pancreas, or liver, after an interval sometimes of as much as several hours.

When vomiting arises from congestion of the brain, as in apoplexy, drowning, concussion, or in dead drunkenness, it is increased by the horizontal posture; when it arises from a deficient supply of blood, as in fainting, anæmia, and sea-sickness, that position relieves it.

The contents of the vomit, which can afford practical suggestions to the practitioner, are the following:—

Mucus, if it is in large stringy masses, shows a generally diffused morbid condition of the stomach itself; if it is in small round lumps, it has most probably been secreted from the bronchi and swallowed.

Blood, when it comes from an open vessel perforated by an ulcer, always is in considerable quantities, and contains black clots; if it is mixed up with mucus, brown and shreddy, it denotes a high state of congestion of the gastric walls, rupturing some small capillaries, or what is commonly called exudation.

Saliva, readily distinguished by its alkalinity, and the abundance of buccal epithelium contained in it; when in large quantities, it denotes an irritable state of œsophagus and fauces; when it constitutes the bulk of the vomit of pregnant women, you will often find associated with it a sort of salivation in the mouth.

Fæces or fæculent smell. This is usually referred to a *reversal* of the peristaltic motion; but I do not think it necessary to resort to such a strained explanation. When we reflect that about twelve quarts of secretion is daily poured into the intestines, it is easy to see that you have only to stop the onward peristaltic wave and absorption, for the ilia to get overfilled, and for their contents to overflow upwards into the stomach. There they naturally produce vomiting, just as they would if swallowed. Such a paralysis of muscles and absorbents takes place in peritonitis, as well as in mechanical obstruction of the ilia, and consequently in peritonitis you have sometimes fæculent vomiting.

Fermenting matters in the vomit show the continuous retention in the stomach of some remains of the food or of vegetable growths in a constant state of chemical change. There is therefore present a quantity of adherent mucus capable of retaining them there.

Acid matters in excessive amount may arise from a similar state of things; but it appears as if simple torpidity of stomach, without necessarily the presence of mucus, can occasion it.

Pure unchanged food shows that the vomiting arises from the state of the nervous system, which is either *locally* irritable, from neighbouring anatomical changes; or *secondarily*, as in pregnancy; or *generally*, as in hysteria.

The remedial measures which I have found most useful in cases of vomiting are the following:—

Hydrocyanic Acid, where it arises not from any fault of the stomach itself, but from the secondary condition of the nervous system, as in pregnancy, in diseased heart, in abdominal tumour, in pulmonary consumption, in peritonitis.

Carbonate of magnesia, in the vomiting accompanying gastric mucous flux, with copious formation of acid.

Opium, in acute vomiting from gastric ulcer, from malignant tumour, in fæcal vomiting from perforation, peritonitis, internal hernia—in short, wherever the vomiting is accompanied by much local pain.

Chloroform, in the vomiting at the commencement of fevers. It may be applied either on a cloth to the epigastrium, especially in choleraic vomiting, or taken by the mouth.

Leeches.—Very often the vomiting in cases of gastric ulcer will not be appeased till some leeches have been applied to the epigastrium.

Milk and lime-water, as a sole diet, will often alone stop chronic vomiting. Complete rest and absence from excitement must accompany it.

Brandy, in teaspoonful doses, is a favourite domestic remedy. It is suitable in acute cases for the nonce, and will often stop nervous vomiting from mental causes, but is obviously not adapted for chronic disease.

Creasote.—This is a whimsical remedy, and I confess I cannot at all satisfy myself what cases it is suited to. The vomiting certainly seems checked by it sometimes, sometimes is aggravated, more commonly is uninfluenced. The cases where it has done good have appeared to me generally dependent on nervous causes. For example, it has been beneficial in hysterical vomiting.

Valerianate of zinc I tried once, in hysterical vomiting, with good effect. But in these patients the most powerful remedy is the *shower bath.*

Ice is often most useful in acute vomiting in fevers, in chronic cases of gastric ulcer, and in all cases is an agreeable remedy in warm weather.

The administration of food in cases of chronic vomiting is a matter of much importance. You must not let your patient be starved. Even when milk and lime-water does not check the vomiting, it is by far the best diet. In teaspoonfuls at a time, it can almost always be kept down.

You must not suppose the being starved to death from vomiting an hypothetical fear. A young woman came under my care a few months ago who had been deserted by her lover. She had had violent hysterical fits, and an utter inability to keep anything on her stomach for some days: the pulse was failing, and the tongue getting dry and brown. An attempt was made to retain life by means of nutritive enemata, but in vain. At the post-mortem examination every organ was in a completely normal state, and the catamenia were flowing from the uterus. Clearly she had died of starvation only.

When sea-sickness goes to the extent of making a person seriously ill, it is worth while to stop it or prevent it, as you can generally do by a large dose of opium. But it is very far from being worth while for healthy persons, or even invalids, in ordinary cases, to take this preventive; for a small dose is useless, and the requisite large one makes the patient endure much more discomfort afterwards than the sickness during the voyage would have caused. Chloroform does not arrest the nausea, but it certainly does seem to control the violence of the straining. The best remedy for healthy persons to take is very frothy bottled porter: if it does not in every case prevent the vomiting, yet the prostration afterwards is certainly avoided, and the ejecta are not so disagreeable.—*Lancet, August* 8, 1857, *p.* 132.

30.—ON DIARRHŒA.

By Dr. T. K. Chambers, Physician to St. Mary's Hospital.

[The two great functions of mucous membranes are absorption and secretion; the latter is of most importance in the stomach, the former in the small intestines. When absorption is deficient in the small intestines we have a true diarrhœa which must be distinguished from mere frequency of evacuation or tenesmus, which arises from abnormal states of the colon or rectum, and it is possible that even less than the average quantity of fæces may be passed.]

The prevailing contents of the stools constitute the best principle of division; and according to it we may speak without being misunderstood of Bilious, Watery, Muco-purulent, Bloody, and Putrid diarrhœa.

Bilious diarrhœa is the simplest form of the disorder. Bile, normally poured out by the liver to the extent of from three to four pints a day, merely requires not to be concentrated by the intestinal absorption, to add very largely to the excrements. Its presence is declared in them by its well-known smell, and by a colour exhibiting various shades of yellow, brown, and olive-green, according to its absorption of oxygen, and mixture with fæces.

This arrest of the absorbing power of the intestines and consequent rejection of bile mixed at first with fæces, and when the bowels are emptied, augmented by

the exudation of water from their parietes, is what so often takes place temporarily from the impression of cold, from irritation of the alimentary canal by unwholesome food, and from mental emotion. It is possible also that the qualities of the bile itself may be altered in some cases, or its quantity increased. It may be changed by medicines, as by calomel or by senna, and so rendered incapable of absorption, and be poured through the ilia without their being in fault. Congestion of the portal system, such as is especially frequent in Europeans resident in warm climates, causes the bile to be at one time deficient, and afterwards to be poured out in excess. Irritation of the stomach and duodenum causes it to be retained in the liver and gall-bladder till it is unfit for absorption. In both these cases it is rejected by the bowels and constitutes Bilious diarrhœa.

You must be very careful to distinguish this symptom from a different one, often confounded with it—viz., the presence of a bright, grass-green matter in the stools. This is not bile at all, but in reality, altered blood, and denotes congestive inflammation of the mucous membrane of course requiring very opposite treatment. Your best aids to diagnosis are, first, *the Smell:* in real bilious stools, the odour of the hepatic secretion can always be perceived, in spite of the fæces mixed with it; and at the same time it always prevents putrescence, or even counteracts the incipient putrescence of undigested aliments; while in the grass-green stools the smell is not of bile, but more or less cadaverous or putrid. Secondly, the microscope exhibits in the mucus, which always is present, the usual globules of mucus and pus; with small shreds of fibrine and blood globules.

In *Watery* diarrhœa it is probable that there is increased exhalation of aqueous fluid from the blood-vessels of the intestines as well as an arrest of its absorption. In this form, when pure, if the fæces are retained by voluntary effort, they may be concentrated nearly to their normal condition by the removal of the water, and thus a test afforded that their state depends merely on the addition of this constituent. Thus, for instance, if you take a saline purgative, you may feel several pints of fluid rolling about in the bowels; but if you resist the inclination to stool, it goes off at last, and you void afterwards little more than the ordinary amount of semi-solid fæces. It is not so in bilious or other diarrhœas, except the watery.

Watery diarrhœa, when not arising from the anti-osmotic action of neutral salts, indicates a congested state of the venous plexus of the alimentary canal, and a consequent morbid proneness to exhalation and deficiency in absorption. The vitality of the mucous membrane is deficient, as is shown in cholera and low fever; and if not restored, local death, exhibited in ulcers and sloughs, must be the result.

The exhalation, however, tends to become habitual, and so continues beyond the period of congestion, so that the whole mass of blood is relieved of its water, and thus dropsical swellings may be re-absorbed and passed off through the bowels.

In *Muco-purulent* diarrhœa, water is in excess, but the characteristic is the presence of mucus or pus mixed with it; in which also there are, in acute cases, shreds of fibrine, blood-globules, and flakes of the peculiar epithelium of the bowels.

Should any of these products of inflammation be alone, separate and unmixed with the fæces, then it is probable they come from the colon or rectum; but if they are mixed up with a large quantity of watery fluid, and still more, if that watery fluid shows itself to be the serum of the blood by coagulating with heat, then there is little doubt of their source being the mucous membrane of the ilia, whose morbid condition it consequently indicates. The fluid in muco-purulent diarrhœa is always highly alkaline, and if examined with the microscope, crystals of ammonio-magnesian phosphate are found scattered through it. If allowed to stand, it separates into two distinct parts: the one *serous*, varying in colour from complete whiteness and transparency through all the shades of yellow to deep brown, or where blood is present, to red and black, in which are the flakes of fibrine, the ammoniacal crystals and floating globules; the other *sedimentary*, consisting principally of grey, granular matter, the débris of food and more or less colouring matter of the bile and semi-digested blood.

The degree of serosity and the proportion of the products of inflammation in the

first, show the extent to which inflammation has gone in the mucous membrane. Whiteness, bloodiness, putridity, alkalinity, being bad signs; yellowness, opacity, the smell of bile, and the absence of putridity, being good.

The second, or sedimentary, portion proves the condition of the general system rather than that of the ilia in particular. If it is copious in proportion to the fluid, then the normal function of destructive assimilation is shown to be little interfered with: if it is scanty, this important process is arrested, the effete morbid tissues are not being removed from the body, and a more grave state of affairs exists. The quantity of solid sedimentary matter is the best test you can have of an advance towards health, or departure therefrom, in all cases where there is this state of bowels.

The most common examples of muco-purulent diarrhœa are found amongst acute diseases, in low fever, in cholera, enteritis, and dysentery, especially in the teething dysentery of children. Amongst chronic diseases, ulceration of the bowels, whether a consequence of phthisis or low fever, is the most usual cause.

Bloody diarrhœa, where the blood is in small streaks in the mucus, or slightly mixed with the serum, or mixed with the grass-green mucus above described, indicates an inflammatory state. When it is in clots, either black or fibrinous, with the globules partially washed away, it shows that a blood-vessel of notable size has been opened into, probably by ulceration. Should pus be mixed with it, the diagnosis of ulceration is confirmed. Black, semi-digested blood, precipitated by standing with the sediment of fluid stools, comes from high up in the alimentary canal, as it indicates its exposure to the gastric juice. It not unfrequently comes from the stomach itself.

Putridity of the stools in diarrhœa always shows that there is an imperfect quantity of bile in them, one of the most clearly-ascertained functions of that secretion being to prevent the chemical decomposition of albuminous matters. This may arise from two sources—namely, the food taken, or the albuminous secretions into the alimentary canal. A close examination of the stools will generally distinguish them. If it is non-digested food which is decaying, then the solid constituents of the fæces are bulky, pale, containing large lumps of still paler substance visible to the naked eye. And if these are examined by the microscope, they will be found to consist of muscular fibre, fat, and other parts of victuals, often swarming with live infusoria and fibriones. This occurs from time to time in all cases of deranged digestion. If the fœtor arises from the albumen of the exhaled serum, it will be observed to be situated in the most fluid part of the motions, which are like the washings of macerated flesh, while the solid part is scanty and comparatively unaffected. This shows a much more serious state of the vital powers, and in severe complaints, such as low fever, is usually the harbinger of death. It is often joined to a peculiar mouse-like smell in the sweat.

In some instances of mucous flux and indigestion in the upper part of the alimentary canal, the stools are acid from time to time. There is nothing special in the pathology of this. It arises simply from so much acid being formed from the decomposition of food, that it cannot be neutralized by the alkaline juices. Sometimes the acidification takes place in the stomach, sometimes in the cæcum, during the delay of the decomposing aliments there. In the latter case, considerable pain is often experienced in the right iliac region, and in the course of the colon just before the evacuations.

In all forms of diarrhœa from affections of the small intestines the evil is twofold: first, the aliment, which ought to contribute to the support of the system, is hurried through the abdomen, and so the supplies are cut off; and, secondly, destruction is carried on at an increased rate by exhalation from the mucous membrane of the bowels. The stick is being cut away at both ends, and hence there is nothing which produces such rapid emaciation. Where *soi-disant* "diarrhœa" is reported to you as existing for any length of time without emaciation, always let your suspicions be aroused; observe carefully whether the quantity of excrement really is in excess, or whether the ailment is not rather of the nature of tenesmus, and arising from the colon or rectum. You will generally find such to be the fact, and must vary your treatment accordingly.

Sometimes diarrhœa seems to be the transference of a tendency to exudation of

serum from another tissue to the alimentary canal. Such is that which sometimes comes of its own accord, or may be artificially induced in ascites, and which certainly diminishes the effusion. Such is the diarrhœa of uræmia, which, however, does not usually relieve the anasarca, but rather increases it from the weakening of the blood which follows. Hence it is a very bad, almost a fatal symptom in the latter disease.

The most important indication of treatment is connected with the diet. It must be such as does not require a perfect state of the digestive organs for its absorption, while, at the same time, it is nutritive to the patient. The most complete is milk and lime water. In feverish cases it may be iced, and soda water may be occasionally substituted for the lime. Keeping a person solely on this diet is often sufficient alone to cure all sorts of diarrhœa not dependent on a permanent chronic cause; and even where there is such a cause for it, very great temporary benefit is derived, which forms a better starting-point for medicinal treatment than the previous state.

In a temporary diarrhœa without other disease the loss of the normal supply to the body is not of so much consequence; a short starvation, perhaps, does good to a person otherwise healthy. But in severe acute disease, or in long-continued chronic diarrhœa, this is an important consideration, and care must be taken to allow for it. Since food in the usual quantities at once cannot be borne, and is rejected undigested, give it very frequently and in small portions. The alkaline milk diet I have just recommended allows this to be done most conveniently. A jug of the liquid may be kept close at hand, and drunk from time to time, so that as much nutriment may be taken in the twenty-four hours as would be done by a healthy person without the alimentary canal ever being overloaded.

When there are lumps of feculent matter in the stools, and a smell like that of normal excrement, give purgatives. Until you get rid of these remains of previous constipation, you will be sure to have a relapse of diarrhœa, though your medicines may check it for a time. When there is no normal smell present, I have never found purgatives beneficial. This is a better rule than the routine practice of always commencing the treatment with a purgative—a plan which I have known very injurious in cases of chronic diarrhœa.

Where the products of acute inflammation are found mixed in the stools, such as white and opaque mucus, flakes of fibrine, epithelium, blood-streaked mucus, bright-green matter, &c., as above described, leeches, fomentations, warm hip-baths, and poultices to the abdomen, are the appropriate treatment, and should not be delayed. In the case of babies, the whole abdomen and loins may be fastened up in a large circumambient poultice, which they cannot wriggle away from, one or two leeches put on near the navel, and the bites allowed to bleed for some time. The drugs I would have most trust in are calomel, ipecacuanha, and carbonate of soda. Of the first and second equal quantities, and a double quantity of the third, may be made into powders, of which from four to six grains, according to the child's age, may be given every three hours.

Be very careful in infants to look to the teeth. The state of bowels may very likely be dependent on reflex irritation from the dental nerves. Lancing the gums will sometimes stop a most violent diarrhœa where the stools show evident proof of the inflammatory condition of the ilia. In teething infants, too, opium is of striking utility. I begin with half a grain of Dover's powders every three hours, increasing the dose by half a grain every three doses, till a decided excess of *sleepiness is produced by it.*

In low fever the presence of diarrhœa indicates to me the employment of mercury in the form of *mercury with chalk.* The effect of this drug is the increase of solid sedimentary matter in the stools; in other words, a restoration of the destructive assimilation going on in the body. The motions are diminished in number and fluidity, but not in actual quantity. Thus the tissues devitalized by the typhoid poison are removed, and can be replaced by new nutriment. I am used to take this increase of solid matter as an evidence and test of benefit accruing from the use of mercury, and as a prognosis of good.

Where in the absence of fever blood is passed by the bowels, the two most powerful means of checking it I have found to be turpentine and acetate of lead, especially the latter. Its direct influence as a poison on the bowels would have

led to expecting this. If the hemorrhage has gone on for some time, I am inclined to think it must be sometimes due to a clot distending the bowel, and preventing it contracting upon the bleeding spot, for certainly a dose of castor oil, in the results of which a quantity of pale clots were exhibited, has several times in my experience stopped hemorrhage from the bowels.

The long continuance of diarrhœa from ulceration of the ilia must starve the patient. It tends also to prolong itself; for the weaker the system is, the more irritable are the sore places, and the less can the morbid actions they set up be resisted. It is right, therefore, to use direct means for arresting it. The best are such as blunt the sensibility of the ulcerated spots. The milk-and-lime-water diet should be used first, then chalk and opium, which appear to act on the sore mucous membrane just as they do on a raw blistered surface of skin. If these fail, sulphate of copper should be used in doses increased from a quarter of a grain up to two grains. If no good accrues from this, I suspect an error has been made in the diagnosis.

Where there is a simple flux of transparent mucus without fever, pain, or pressure, or any fibrine or blood in the motions, the vegetable astringents, such as logwood, bark, kino, and tannin, are often of great use. In such cases, too, I have prescribed iron with seeming benefit. I must, however, say that I feel doubtful whether this form of flux is not rather due to the colon than to the small intestines, in the great majority of instances.

Where the solid matter is copious, pale, and fetid, consisting mainly of undigested food, inspissated bile may be given with benefit; the stools become darker, less fetid, and less frequent under its employment. This is particularly the case in children whose mesenteric glands are diseased. I am hopeful, too, that pepsine will prove a still more efficient remedy in the same cases, as it certainly diminishes the fetor of the motions in the best way—namely, by promoting the normal solution of the food.

Acid diarrhœa indicates the free employment of chalk.

The use of opiates in diarrhœa must never be made a matter of routine. As a general rule, I have found them beneficial without consequent harm, in cases where there was tenesmus and frequent stools; but where the fæces are bulky and copious they appear to impede the natural secretion. Where the stools also are putrid, caution is required in their use. In the diarrhœa which so often accompanies and proves fatal in uræmia, they check, indeed, the debilitating flux, but they are apt to bring on coma.

In some cases of diarrhœa from chronic mucous flux of the intestines, without ulceration or acute inflammation, I have found riding exercise very beneficial. I suppose it is the gentle agitation of the abdomen, combined with the air and amusement, that proves of use.

In recommending the recreation of travelling to invalids subject to diarrhœa you must be very careful where you send them to. The epidemic influence of cholera which has overspread Europe during the present generation, visiting almost every square mile of it several times during the last few years, has in many places left behind it a chronic endemic poison. The natives are, indeed, insensible to it, but few strangers escape becoming affected more or less, according to their idiosyncrasies. Strong persons find it only an inconvenience, but an invalid is put in some danger, and certainly loses all the advantage of the tour. This is especially the case in the mountainous districts of the south of France, the Pyrenees, and Dauphiny, and in the volcanic regions bordering the Rhine, the Eifel and Moselle country, as well as those in the centre of France, the ancient province of Auvergne. All these places are attractive from their picturesque beauties, and therefore it is necessary that you should be warned of this evil attendant upon choosing them as the scene of a tour. You will see sometimes the whole number of strangers at a table d'hôte obliged to leave the room at once, and cause one another no slight inconvenience by tending all together in the same direction; and in the Pyrenees I have seen powders of chalk-and-opium put up as the regular concomitants of a day's walk. It must not be supposed that this is the result of the foreign modes of cooking. I have known English biscuits and porter, and boiled eggs, adopted as a diet without relief, though of course *nothing* foreign could have got into them. I believe the cause to be that which I

at first represented it—namely, a poison left endemic since the passage of cholera through the country, but to which the natives have become acclimatised. That it is of late years only that it has been prevalent is shown both by local report and the omission of all mention of it from the work on "Climate," by Sir James Clark.

One source from which strangers contract this diarrhœa, is an evil capable of, and rightly demanding, amendment: I refer to the filthy privies in continental inns. A gentleman, eminent in his profession and of good judgment, told me that, during a Pyrenean tour lately, he entirely escaped the diarrhœa which everybody else without exception suffered from, by adhering to a strict rule of never entering one of these disgusting holes, but worshipping Cloacina under the pure light of the stars. Invalids and ladies cannot so well manage this, unless they are rich enough to travel with carriages and servants and peripatetic waterclosets.

FLATUS IN THE SMALL INTESTINES is one of the most troublesome forms of wind. If it escape into the stomach, which is fortunately rare, the taste and smell are peculiarly nauseous, whilst it seems to have considerable difficulty in passing the ilio-cæcal valve. Hence it rolls about in the abdomen from the changes in position which the motion outwards of the alimentary masses involve, and causes the well known and distressing "borborygmi," till it can get absorbed. The abdomen will often be distended for several days with it, without its being able to escape.

The persons most liable to this troublesome affection are anæmic and hysterical women; it follows also the small and contracted liver of spirit drinkers, and sometimes is very annoying in cases of dilated heart. Some persons, also, in apparent health are habitually much troubled with it. I am inclined to attribute it under these circumstances to a naturally sluggish portal circulation, which does not so quickly absorb the contained air as a freer motion in the bloodvessels would enable it to do.

Flatus in the intestines is troublesome during the day, from the tumidity of the abdomen, and noise on motion, and pain in the side; but when it comes at night it causes still more inconvenience by preventing sleep. I cannot explain why this is; there is not enough pain or discomfort to account for it, yet a complete wakefulness and apparent want of desire for sleep prevails. It is to be remarked, also, that it is in most instances made worse by opiates. Sometimes the patient will go to sleep easily and naturally on first lying down, and will then wake up in an hour or two, finding his abdomen tumid and uncomfortable, and will remain entirely without rest for the remainder of the night; or if he drop off for a few minutes into unconsciousness, it seems rather to aggravate than relieve the feverish restlessness, and to cause headache.

The most effectual remedy is finely powdered charcoal, in doses of from ten to twenty grains, and of the aloes-and-myrrh pill just enough nightly not to act as a purgative. The air seems to be absorbed, and the peristaltic motions quickened, by this treatment. Should that not be effectual, you can employ strychnine in small doses in the pill.

It is scarcely necessary to say that indigestible articles of diet must be avoided, if the patient would prevent a recurrence of the complaint; and it stands to reason also, that cold sponging and bathing, sea-water, and, in short, all hygienic remedies which improve the general health, will conveniently accompany the treatment.—*Lancet*, *Aug.* 22, 1857, *p.* 185.

31.—ON THE DIETETICS OF DERANGED DIGESTION.

By Dr. T. K. CHAMBERS, Physician to St. Mary's Hospital.

[Dr. Chambers truly says that in managing the food of dyspeptic patients, it is well to have some *broad law* to direct us. The following are his directions:]

The leading idea of the first placed and most important rules is simply that of sparing a weak member—working those who can work and resting those who cannot.

When the stomach is off work spare it, and leave the digestion as much as possible to the intestines.

This applies to cases of weight and pain after eating, heartburn, acidity, hæma-

temesis, vomiting of unaltered food, and fermentation. Should the conjunction of systems enable us more definitely to diagnose gastric ulcer, mucous flux, cancer, or any other more definite anatomical change, the application is all the more forcible.

Spare the stomach both its *mechanical* and its *chemical* toil.

The first is the hardest, and therefore most necessary to be avoided. A meal —that is, the laying in of victuals to avoid future rather than present hunger—is a labour, even to the healthy; so do not impose it on a sick stomach. In very bad cases, do not divide the daily allowance into meals at all, but assign such quantity as appears enough for the twenty-four hours, and let the taking of it be spread over the whole time, as equally and with as short intervals as possible. In milder cases it will be sufficient to "*spoil*" the meals—that is, to take food between the usual times, so as to leave neither the necessity nor the inclination for eating at once as much as other people. One would be sorry to recommend to the healthy an over-care for their diet, but to invalids subject to gastric derangement, you cannot do better than advise an imitation of a famous centenarian witness, examined by the scientific judge, who said he attained his great age by always "eating before he was hungry, and drinking before he was dry."

Take care, however, that your patients do not spoil their dinner and eat it too: that last error would be worse than the first. Make it a rule that the slightest sense of repletion is to be a warning to desist.

Another valuable expedient for sparing the organ, in cases only slightly indisposed, is Dilution of the meal. Copious watery drinks carry the food on quicker through the pylorus, and give great relief to over-sensitive, irritable stomachs. But at the same time it must be remembered that thus the time for the action of the gastric juice is shortened, and its chemical strength lessened, so that more is given for the intestines to do. It is better, therefore, to let this dilution be practised as long after the meal as the case admits of. It should be avoided also as a general rule where an obstructed circulation impedes absorption of the water by the portal veins. Patients with dilated hearts, for example, and some cases of anæmia and of diseased liver suffer much inconvenience from a sloppy diet. Obese persons also should avoid dilution; it washes away the albumen which they do want, and allows of the absorption of fat, which they are better without.

The chemical toil of the stomach may be spared by giving it less to digest, and more to digest with. Take care that the weak but well-meaning organ is not reduced to despair by solid lumps of albuminous food. The best form of nitrogenous aliment in these cases is whey, or milk prevented from coagulating by a copious admixture of lime-water. This fluid meat will pass through the stomach unaltered, the gastric juice will trickle through the pylorus at its leisure after it, and with the intestinal juice will digest the casein in the intestines. Next in easy solubility comes soup made fresh, weak, and at a low temperature—fresh that it may not decompose; weak, that it may be easily absorbed; at a low temperature—that it may not be filled with innutritious gelatine, or with hard-boiled albumen. Meat is suitable in proportion as it is soft, easily disintegrated, free from fat which might oppose the soaking in of the gastric juice, and quickly cooked. The well known list of Dr. Beaumont sets in the order of these qualities a great number of articles of diet. But I think it more useful for you to have the principles of selection, than a mere experimental enumeration of the articles themselves.

To mix starchy food with albuminous in cases of weak stomach digestion is an irrational practice. It soaks up the little there is of the valuable gastric juice, and then makes no use of it; for starch is quite unaltered by the peptic solvent. This is very bad economy indeed. Moreover if taken in quantity sufficient to assist much as a nutriment, it is too bulky, and being converted into sugar by the saliva, turns acid in a mass, and puts a stop to further digestion. This is particularly the case if it is in solid coherent lumps, such as potatoes, soft bread, pastry, and the like.

Starchy food, *un*mixed with albuminous, is a different thing altogether. There certainly are some cases of gastric disorder, which are much benefited by a temporary adoption of such a diet. It is the best during acute catarrhal bilious attacks, at the commencement of treatment of even chronic gastric cases, and

whenever the dusky complexion, hypochondriasis, and general distress, show that arrested moulting has caused a retention in the body of *effete* tissues. It does good, in fact, as a temporary starvation. Hence you will see me occasionally begin the treatment of such cases by our "simple diet," and still oftener in private practice, where starvation for a time is more generally wanted than in hospitals, I give a patient nothing for two or three days but arrowroot, panada, tapioca, gruel, &c. This enables the congested portal system to disembarrass itself so as to leave a clear space for the taking up fresh supplies.

As you return from a pure starchy, or pure animal diet, to that admixture of the two which is normal and necessary to the healthy condition; or if you consider that the case is not bad enough to oblige you to adopt either one or the other absolutely, you may be of use by so arranging that the two sorts of aliment shall not be together at once in the stomach. For example, let the morning and evening diet be vegetable, and then let several hours pass before and after a mid-day meal of purely animal food.

Spare thus the stomach by giving it *less to digest*. You need not be afraid of starving your patient by diminishing the quantity eaten. A little digested goes much further than double the amount only swallowed. For example, you saw last time we went round the hospital, a girl, in the corner of Victoria ward, who had gained four pounds in weight during six days, on the sole allowance of three pints of milk and less than twelve ounces of bread per diem. A man (No. 8 in Albert ward) has also visibly gained flesh in the same time, though he has only a pint of beef-tea besides what I mentioned as the girl's allowance. He is too weak to stand in the scales, but the increase is apparent to the eye. Both these patients had, till their admission to St. Mary's, been trying to strengthen themselves by meat, and whatever they could get, but having gastric ulcers did not digest it, and were rapidly emaciating.

Spare it also by giving it *more to digest with*. I mean by supplying an artificial gastric juice. This is a mode of treatment so interesting just now, from our being enabled to do it with novel facility, that I shall make it the subject of a separate short lecture, so as to be able to give fuller details of its practical working.

II. *When the functions of the small intestines are off work, spare them.*

Of acute diseases, this applies particularly to typhoid fever, (during both its height and its sequelæ,) to enteritis, diarrhœa, and cholera; of chronic diseases, to ulceration, tubercular deposits, either in the peritoneum, Peyer's glands, or mesentery, and secondarily, to disease of the liver.

What, now, are the functions of the small intestines in relation to different forms of aliment? and what colleagues have they that can be trusted to take their duties during a temporary vacation? They absorb all matters soluble in water and capable of endosmosis, and have in that work all the mucous membrane of the alimentary canal to assist them. They convert starch into sugar before absorbing it, in conjunction with the saliva and pancreatic juice. They disolve albumen, and convert it into peptone, in conjunction with the stomach. But in the digestion of fat, they have none to help them.

All ordinary *fats and oils*, then, must be rigorously excluded from the dietary of these patients. Even cod-liver oil, so peculiarly wanted in phthisical cases, and so easily digestible, will often become rancid in ulcerated bowels, and aggravate the diarrhœa. If it does aggravate the diarrhœa, depend upon it more harm than good is done by the remedy. Leave it off forthwith; the case is an unsuitable one for it at that stage of the disease. And if cod-liver oil disagrees, *à fortiori* do other less digestible fats. I have known the mere skimming the fat from broth make all the difference whether it were digested or not, and leaving off the simple article of butter make a previously useless treatment immediately successful.

Starchy food will agree only on the conditions that it is taken in small quantities, and that the saliva is in a state to do alone what generally it has the small intestines to help it with. If the secretions of the mouth are deficient, it will not agree. Hence, in typhoid fever, for instance, where the fauces and tongue are dry, you will see me never order arrow-root, bread, panada, gruel, potatoes, or any amylaceous article. Where they are eaten, they will be found unaltered in the

fæces, and not rarely cause considerable aggravation of the symptoms. I have particularly observed this in convalescent patients after fever. You are surprised often by an unexpected relapse: examine the stools, and there you see lumps of potato, bits of pastry, or a mass of starch granules. The foolish friends have been disobeying orders, and giving these articles, which cannot act as a nutriment and do act as a poison.

On the other hand, a phthisical patient, with a clean, wet mouth, will generally digest them well, in spite of his ulcerated bowels, provided they are well chewed and are not lumpy.

Albuminous food will agree, provided that the stomach is doing its duty. But you must not forget that it has lost a potent colleague, and be careful to prepare the food so as to require only a short time to digest it. Milk must not be passed on to the small intestines by being guarded with alkalies, but had better be soured and made into whey. Some of the curd, broken up quite small, may be taken with it. Frequent dilution with watery drinks, and use of artificial pepsine, are of eminent use in these cases, so as to ensure the absorption of the food as quickly, and as high up in the intestinal canal, as possible.

III. *Where you wish to hasten absorption, dilute with water.*

This is so obvious a consequence of those laws of Osmosis which almost every course of lectures, anatomical, botanical, physiological, medical, has occasion to recite, that I will spare you.

The rule finds its chief application in fevers, but it must not be passed over in ulceration of the alimentary canal and other local disorders, where protraction of the process is painful, or in emaciation and convalescence, where we would not wish to waste time, but to give a person all the nutriment possible in the day.

IV. *When you wish to delay absorption, dilute with solids.*

For solids to be diluents, they must of course be incapable of absorption; and the substance I principally refer to is cellulose in its various forms of chaff, bran, husks, skins, seeds of fruit, green vegetables. Cellulose, being incapable of chemical change there, passes unaltered through the alimentary canal, carrying with it first the chyme prepared for absorption, and then adding its bulk to the fæces excreted. Thus the absorption is spread over a longer time and a larger surface of mucous membrane, and the whole brought equally into work. A collateral advantage is that the peristaltic wave acts with more regularity when it has a solid to propel, than when the contents of the tube are fluid only. The rule is useful, not so much at the sick-bed as for the prevention of sickness. Many persons are made ill by their diet being more immediately digestible than they have been used to. Scotch labourers on exchanging oatmeal for wheat-flour, Finn recruits on getting bread at head-quarters without birch-bark in it, country persons on coming to London or Paris, often suffer from this cause. The mode of prevention is obvious and cheap; cabbages, brown bread, and charcoal offering types of treatment readily altered according to taste.

In the administration of medicines, something may be learned from the same expedient. Quinine occasionally will not agree where powdered bark or decoction of bark will yet succeed very well; and the same may be said of the soluble and insoluble salts of iron, of morphia and opium, and similar drugs identical in all but insobility. I believe the secret is that a slower and more graduated absorption is gained.

I have elsewhere stated reasons for suspecting that gum and gelatine may be classed amongst unabsorbable diluents of the food, and are not really nutritious; but the argument is hardly suited to a practical lecture.

V. *When the diet has been diminished, return* gradually *to the normal in quantity and quality.*

I suppose mere instinct teaches this, for all acknowledge the justice of it as a sort of truism, and agree that a convalescent diet should be "light" at first, and afterwards more "substantial." Perhaps, as respects quantity, error is rare; but the spirit of the rule in regard to quality is often lost by misinterpreting the words "light" and "substantial." Scientific men must not think vaguely, and you must have clearer ideas than the old nurses who so often hurt your patients by misapplying these expressions. I shall not, therefore, think I am wasting time by explaining what the rule really means.

I formerly divided foods into such as are capable of direct absorption without

change, and such as require a previous change by the digestive juices; and the same division has also been adopted by M. Bernard. By subdividing the latter class into such as require only direct chemical change, and such as require disaggregation as well, we get three groups of aliments; the first the "lightest" or most digestible; the last the most "substantial;" the second intermediate. M. Bernard observes the first necessitate but one physiological act; the second, two; and the last, three; and, consequently, in that order demand proportionate amount of labour from the system.

Under the first head come water, essential oils, tea, coffee, alcohol, ethers, salts, sugar, whey, gravy (containing osmazome); asses' milk, with its small quantity of butter and casein, and its large allowance of sugar, forms a transition, through cows' milk, to the second class, in which come soups, lightly-cooked eggs, well-boiled liquid starch; for the third class, tripe, oysters, sweetbread, and boiled chicken come nearest to the second, while the power of digesting hard meats (such as beef) or solid lumps of starch (such as potatoes,) shows that the full normal powers of digestion have been regained.

This is something definite, and with this idea you will find no difficulty in making a graduated scale up which a convalescent patient may safely mount.

VI. *The use of alcohol is indicated in diseases—*

1*st. Where the pathological condition limits the due supply of nutriment, and the repair cannot therefore equal the normal destruction.*

2*ndly. Where the destruction is so excessive that the normal repair cannot equal it.*

Under the first head come all acute typhous, and, in fact, all acute diseases, not excepting inflammatory ones, where the "nervous" energy (as it is vaguely called, meaning vitality in general) is defective.

In low fever, if you examine the urine, you find the specific gravity high, and the urea in normal or even in excessive quantity, showing that the nitrogenous tissues are passing away as quickly, or more so, than in health. The phosphates are also going off in the same way and by stool, and the blood exuding into the alimentary canal and bronchi. Yet their place is not taken by fresh tissue—the vital powers are deficient—death is struggling hard to overcome life. What you have to do is to arrest death.

The use of wine in pneumonia, in surgical injuries, and, in short, the not being frightened out of stimulation by the termination in "*itis*" has saved many a life of late years in this metropolis: and though perhaps it may not be so much required in the more bracing regions to our north-east, still even there the practice is gaining ground against prepossession, showing that it is really beneficial.

Under the same head, too, comes a deficiency, congenital in some individuals, who constitute the half-pitied, half-despised class known as "poor creatures"—persons who, without any classifiable disease, are always over-exerting themselves, and unable to live like their neighbours without failure. From deficient powers, they are unable to assimilate enough to take the place of the interstitial destruction, and therefore if the outgoings are not limited, or the incomings increased by special management, their tissues must suffer, and innumerable ailments arise as consequences of over-destruction. In the management of these cases, dietetics are of the utmost importance, and of dietetics the most important part to them is the judicious employment of alcoholic stimulants. If too much is used, a low state of vitality is induced, which leads to degeneration of the various viscera; the heart may become weak and dilated, or the kidneys shrunk and hard, or the liver contracted and impervious, or the stomach and other glands lose their secreting structure, or the blood become pale and fatty, the skin sallow—in short, some of the evils of chronic alcoholism be set up. If too little, then exhaustion of the nervous and muscular system gives occasion to anæmia, inability to digest food, emaciation and debility; while those with hereditary tendencies thereto run the risk of tubercles of insanity.

The best general rules I can give for the attainment of the golden mean of alcoholic stimulation are the two following:—

First, *let the form be dilute.*

Second, *let the effect of one dose go off before another is taken.*

The dilution of an accessory drink makes it a better measure—a man easier

finds out when he has had enough. Besides, the direct effect of the alcohol on the mucous membrane is avoided.

A strict observance of the second rule enables us to shun all the dangers with which teetotalers threaten the moderate consumer, and the neglect of it constitutes the peculiar risk of spirit-drinking. It is a familiar fact, that men take their pint of wine or beer daily throughout their working life, feeling daily the same beneficial exhilaration; but if once they begin to experience depression afterwards, and to relieve that depression by fresh doses of alcohol—"a hair of the dog that bit them"—temperate use is at an end, abuse has begun—in order to produce the original effect, the quantity requires to be continuously increased, and then commences the slow interstitial death, which is the goal of the habitual spirit-drinker. —*Lancet, Oct.* 17, 1857, *p.* 383.

32.—ON DYSPEPSIA.

By Dr. Lees, Physician to the Meath Hospital, Dublin.

[By dyspepsia is meant a derangement of the natural functions of the stomach, quite independent of any organic or inflammatory disease of that viscus. It is often a very troublesome affection to treat, and the treatment must be constantly varied according to the cases.]

Excessive *acidity* of the stomach is a very constant and troublesome symptom, being more often met with, and in a greater degree, in its functional derangements, than in its actual diseases. The gastric juice, in a healthy stomach, ought to be merely secreted in sufficient quantities to act on the food, which if it be of an indigestible kind, or if detained too long in the stomach, then not only an excess of the natural acids (the muriatic and lactic) may be secreted, but other acids—especially carbonic acid—may be generated by a process of fermentation, which causes distension and flatulence. The best treatment for this condition is, first—to regulate the quantity and quality of the food, keep the bowels open by some warm aperient, particularly if the patient be of a gouty habit, give then a few grains of rhubarb, with one of capsicum, in a pill just before dinner, and a few grains of bi-carbonate of soda, or potash, about one hour after meals. Let the drink be water; and if a stimulant be required, a little brandy or sherry well diluted, or aromatic spirit of ammonia in a little water. Another troublesome symptom of dyspepsia is *heartburn*, or cardialgia, characterised by a sensation of heat or acidity at the cardiac orifice of the stomach, often extending up the œsophagus, and sometimes accompanied by the regurgitation of an intensely sour fluid, or acid gas, very perceptible to the taste or smell. In most cases it comes on in from one to three or four hours after taking food, is a result of faulty digestion, and mostly met with in persons who lead sedentary lives, or have their minds actively engaged in business. But there is another form which comes on almost immediately after taking food, and often subsides as suddenly, so that it may be termed nervous, especially as it occurs chiefly in persons of a nervous temperament, and who have suffered from exhausting diseases, or mental depression. Dr. Chambers states that this form is often worse after the early, than after the later meals of the day, even though the diet should be more sparing, and more digestible.

In this form of heartburn our great aim should be to remove the exciting cause, and invigorate the system by the preparations of valerian, iron, and quinine; but we should commence the treatment by some medicines which we know will act directly on the stomach, as bismuth, hydrocyanic acid, or morphia; but in the first form described you will generally give relief by a few grains of bi-carbonate of soda or potash; and in some cases the mineral acids will effect a speedy cure. The late Dr. Prout was very partial to the use of these acids in this condition of the system, especially if there was much flatulence and palpitation, or irregular action of the heart after meals, and if oxalate of lime could be detected in the urine; and Dr. Budd says, that "they are often useful to persons in whom digestion is habitually slow and feeble from a scanty secretion of gastric juice, and who have a sense of weight, or oppression of the stomach after meals."

Waterbrash, improperly termed *pyrosis*, is another very distressing symptom of dyspepsia, and consists in the regurgitation, or sudden gush of a watery or glairy

fluid, often insipid, but sometimes highly acid, so as to set the teeth on edge, not painful, but often giving a sensation of extreme cold. Dr. Cullen, who had much experience in this disease, states that its paroxysms "usually come on in the morning and forenoon, when the stomach is empty. The first symptom of it is a pain at the pit of the stomach, with a sense of constriction, as if the stomach was drawn towards the back. The pain is increased by raising the body into an erect posture; and therefore the body is bent forward. The pain is often very severe, and after some time an evacuation of this watery fluid, varying in quantity from a mouthful to a quart, or even more, takes place." The appetite may be good, but there is often thirst and emaciation. In most cases it is a functional disorder, and is accompanied by other symptoms of dyspepsia; but it may be symptomatic of organic disease of the stomach, or caused by an enlarged liver pressing on this viscus. It affects the female more than the male sex, and is especially liable to occur during pregnancy, if at an early period, owing to the peculiar sympathy which exists between the uterus and the stomach; and when occurring at a late period it is probably caused by the pressure of an enlarged uterus on the stomach.

There is much difference of opinion as to the source of the fluid in pyrosis; but I believe it is a morbid secretion, derived (when acid) principally from the mucous membrane of the stomach. However, in these cases, it is not pure gastric juice, but consists of muriatic and lactic acids mixed with mucus and water; but if the fluid be alkaline, it is probably derived chiefly from the salivary and other glands in the mouth and pharynx, for it then exhibits the ordinary characteristics of saliva, as it is alkaline and opalescent from the presence of the epithelium of the mouth and throat. Dr. Frerichs states, that it converts starch into sugar, and contains cyanide of potassium; so that in these cases it is more likely to be the secretion of the salivary glands, mouth, and œsophagus, rather than a watery discharge from the gastric mucous membrane. In fact, the discharge takes place in a healthy part by reflex irritation from a diseased one; but we cannot determine any fixed rules from the mere acidity or alkalinity of the secreted fluid. In some cases the fluid gushes into the mouth, without any spasm of the diaphragm, or previous warning; but in most it is preceded by a sense of uneasiness at the epigastrium.

The causes of pyrosis may be divided into idiopathic and symptomatic. The first form, common to both sexes, often met with in the lower classes of society, is chiefly due to errors in diet; the second form is mostly met with in females of the better circles, and caused by some fault in the uterine or nervous system. If the diet has been too poor, or too farinaceous, we must improve it by giving a fair supply of animal food before we can expect any change; but if the uterine or nervous system be out of order, we must direct our remedies to them in the first instance. In most cases there is an over secretion of mucus from the stomach, so that astringent medicines are of use, and of these bismuth, lime-water, kino, catechu, rhatany, are useful. Nitrate of silver is of use, as it acts also on the nervous system; but a great objection to these medicines is, the constipation they occasion; so that we must keep the bowels open by enemata, or some aperient medicine, which will act on the intestines. Nux vomica is said to be a popular remedy among the Laplanders, who suffer much from this disease; and Dr. Budd says it may be given in pill, in the dose of from three to five grains, three times a day.

Mineral acids are often of great use, but they should be taken when the stomach is empty, as they check the morbid secretion of fluid by their immediate action on its mucous membrane, whereas alkalies ought to be given while digestion is going on, as they act by neutralizing the acid secretions, which are poured out during that process; so that "it is not irrational practice to prescribe regular doses of acids and occasional doses of alkalies for the same patient, but at different periods of the day, each medicine fulfilling a separate purpose."

If severe pain be felt, you must have recourse to sedatives, one or two drops of dilute hydrocyanic acid, with five grains of bi-carbonate of soda, in one ounce of water, will often give great relief, or ten to twenty drops of chloroform may be given, and if these fail, use opium, commencing with one-sixth of a grain three times a day, combined with extract of aloes. Dr. Pemberton was very partial to the compound powder of kino; but its efficacy was probably chiefly owing to the opium it contains, as it not only relieves pain, but also acts as an astringent, and

checks the morbid secretion. In some cases, particularly those where the liver is deranged, from three to four grains of Plummer's pill every second or third night, will be useful; in other cases, some of the preparations of iron are found to succeed; but no medicine can effect a cure unless great attention be paid to diet, which should consist of plain-dressed animal food, chiefly roasted, and eaten slowly with a small proportion of well-boiled vegetables. Fat, fried, baked, or stewed meats, should be avoided, pastry, salads, acid or dried fruits, pickles, fermented liquors, and rich fish, as salmon or herrings. Some cannot eat potatoes without bringing on an attack; in others tea induces it. Sedentary habits predispose to it, particularly if the patient is closely confined to a desk, and obliged to work after dinner. These persons are sometimes sufferers from a form of rumination, owing to the solid food, particularly meat, regurgitating into the mouth at various intervals during digestion. It differs from vomiting, in not being preceded nor accompanied by nausea, or any violent expulsive effort. It is the same affection as that which has been so well described by Sir H. Marsh as the "Regurgitant Disease," and which he conceives to be chiefly connected with hysteria and struma. But he states that "in some cases of this singular affection there is present a symptom which indicates the co-existence of dyspepsia, viz., an oppression of the epigastrium;" and also he has met with cases characterized by severe gastrodynia, pain on pressure at the epigastrium, epigastric pulsation during digestion, gaseous distension and eructation, impaired appetite, and regurgitation not only of acid or bitter fluids, but also of masses of half digested food. He recommends in these cases a drop of creasote, with one-fifteenth or one-twentieth of a grain of muriate of morphia in pill three or four times a-day, with the compound aloetic pill as an aperient, or prussic acid with or without a few drops of solution of morphia. Slow eating, perfect mastication, food well selected and restricted in quantity, constitute essentials in the treatment. In fact, these cases are to be regarded as forms of dyspepsia, and must be chiefly managed on general principles.

Pain in the Stomach; Gastrodynia.—Pain in the stomach is met with under a variety of circumstances, and in very different, or even opposite, conditions of that viscus. Thus it occurs not only as a symptom in its inflammatory and organic diseases, but it may be equally severe when sympathetic of other diseases in remote parts of the system, as in females affected with uterine disorders; or in even a still greater degree in its mere functional and nervous derangements, in which we cannot detect any appreciable alteration of structure. To these latter forms the term gastrodynia is usually applied; and I will therefore consider them under this term, as distinct from the former. Dr. Abercrombie states, that "pain in the stomach occurs in practice under *four* different forms, which seem to imply important differences in the nature of the affection." 1st. "Pain occurring when the stomach is empty, and relieved by taking food." He considers that this form depends on some degree of acrimony of the fluids of the stomach itself, and is generally relieved by absorbent and alkaline remedies, such as aromatic spirit of ammonia, or magnesia. 2nd. "Pain occurring *immediately* after taking food," and which he thinks is connected with chronic inflammation, or increased irritability of the mucous membrane of the stomach, and should be treated by remedies suitable to that state. 3rd. "Pain beginning from two to four hours after a meal." This, he thinks, is seated in the duodenum, and connected with inflammatory action or morbid sensibility of its mucous membrane; but as it is often accompanied by pain and tenderness on pressure, in the right hypochondrium, it is often mistaken for disease of the liver. He recommends the sulphate of iron in doses of two grains, combined with one grain of aloes and five grains of aromatic powder, taken three times a day; also lime-water, opiates, and bismuth, combined with rhubarb. Dr. Watson considers that this form of pain is caused by acidity in the primæ viæ, and he prevents it by directing the patient to take a small quantity of alkali in some aromatic water, immediately after his dinner, or a cup of warm tea, by which the acid is diluted. The fourth form of pain in the stomach "occurs at uncertain intervals, in most violent paroxysms, with a feeling of distension, much anxiety, and great restlessness." Dr. Abercrombie considers that it depends on over-distension of the stomach, or may be sometimes seated in the arch of the colon, and is best relieved by carminatives, or by a strong injection. Dr. Watson *says that* hydrocyanic acid is a most valuable remedy in these cases, also opium;

but you should never neglect the use of external applications, as you will give great relief by very hot stupes, particularly if sprinkled with turpentine; or apply a large mustard poultice over the epigastrium. Persons of a gouty habit are very liable to be attacked with this kind of pain, which in them is generally best treated by stimulants and opiates, as brandy and laudanum, with sinapisms applied to the epigastrium and feet; but you should remember that there is a form of inflammatory gout which occasionally attacks the stomach with violent pain, attended with fever, and demands an opposite line of treatment. In all these patients great attention should be paid to the diet, which must be adapted to each particular case, as what will suit one may not agree with another; but as a general rule the food should be given at regular periods, in small quantities at a time, and of a plain, light kind, easily digestible.

I will now proceed to consider the true gastrodynia, by which term I mean an affection of the nerves of the stomach, not connected with any change of structure, but characterised by violent attacks of pain coming on in paroxysms, sometimes induced by taking food or drink, but frequently coming on suddenly, without any assignable cause, and often ceasing in a similar manner. The character of the pain varies; some describe it as a cutting or stabbing, others as a tearing or burning pain; some say they feel as if the stomach was about to burst, others as if it was constricted by an iron band; and some say they feel as if an animal was creeping inside of them. The pain is seldom continuous, but intermits and recurs again; it is not excited nor aggravated by pressure of the hand, but is often relieved by it; and though often so severe as to make the sufferer assume every position, in order to get relief, and even unloose their clothes or stays, so as to take off pressure from the epigastrium, yet it is rather owing to morbid irritability of that part than to any actual tenderness. The pain often radiates round the sides, up the chest, to the shoulders; and sometimes, in females, there is great tenderness in the dorsal region, and pressure on this part aggravates the pain in the stomach. They are often in a state of great anxiety, and sometimes there is violent pulsation in the epigastrium; but the pulse is generally quiet, and there is no fever. The pain may be very violent, and then cease suddenly in a few minutes, leaving the patient nothing the worse, or may last some hours, and then cease gradually, but often leaves the patient tired and exhausted, with a sensation of soreness at the epigastrium. The termination of the paroxysm is sometimes marked by copious eructations of gas, which come up without any effort, and give great relief; in other cases there is a flow of water from the stomach, either insipid or very acid; and in some cases there is vomiting of mucus. The appetite is variable, sometimes increased, at other times diminished, often not affected; while in some cases, particularly in chlorotic females, the most indigestible things are frequently wished for, and there may be even perversion of the natural appetite. Thirst is seldom complained of, and the tongue is often natural in appearance, but may be large and moist, or thickly coated with a whitish fur. They often suffer from headache, costive bowels, irritability of temper, and become hypochondriacal, with all the symptoms of aggravated dyspepsia; but in other cases, though the paroxysms of pain may be very severe yet there may be no other symptoms of dyspepsia, and the patient may digest the food well, and be in good condition. This difference in the symptoms may be accounted for by a difference in the form of the disease. One form, which we may term functional, appears to be caused by an excessive secretion of unhealthy mucus, which deranges and oppresses the stomach, and is often met with in the lower classes of society, chiefly caused by errors in diet, or abuse of stimulants: but prolonged fasting, or drinking large quantities of diluents—as tea, or even water—may have the same effect. Mechanical causes—such as injuries, certain sedentary professions or trades, in which the body is bent up or stooped forward, particularly if after meals; pregnancy also, or any tumour in the abdomen—may cause it, by making pressure on the stomach, and thus interfering with its functions. Certain medicines, also—as the preparations of iodine, balsam of copaiba, quinine, and iron, if continued too long—may have the same effect; so that their use ought to be suspended for a short time occasionally. It is this form of the disease which Dr. Barlow has described, in an excellent article in the 'Cyclopædia of Practical Medicine'; but I think he is wrong in applying to every form of the disease his pathology of gastrodynia, "which assigns the

spasmodic pain to the presence of offending mucus, and the efforts of the stomach to get rid of it." The second form, which I will term symptomatic, is essentially a neuralgia; and though very similar to the last form, as regards the pain, yet it differs in its causation, and its being unaccompanied by any other symptom of dyspepsia. This form of gastrodynia may depend on many different causes. 1st. Disturbance of the nervous system—as anxiety, anger, fear, hysteria, over-study, particularly if after meals. 2nd. Alteration in the quality of the blood—as in anæmia, chlorosis, purpura, scurvy. 3rd. Hemorrhages. 4th. Syphilitic, mercurial, paludal, and gouty cachexia. 5th. Diseases in other parts of the system. 6th. Veneral excesses or masturbation in either sex. 7th. Worms. 8th. Hereditary influence. 9th. Sex, as it occurs more frequently in females, particularly in those of a sedentary habit, or subject to depressing influences, either mental or bodily. 10th. Lactation in delicate females, especially if prolonged.

The differential diagnosis of this disease is of great importance for the prognosis and treatment. It is most likely to be confounded with—1st. Simple chronic ulcer of the stomach, as it occurs in much the same class of patients, and the character of the pain is very similar in both; but the aspect of the patient, the history of the case, the irregularity of the attacks of pain, being often quite independent of food or drink taken into the stomach; but, above all, the absence of vomiting of pure blood, or of coffee-ground matters, will generally help us to decide; though in some cases where these symptoms are absent, the diagnosis is sometimes very difficult, as I experienced in the case of a female who was under my care in Meath Hospital, and in whom the paroxysms of pain were attended with great nervous depression, and tendency to collapse, very similar to a case of perforation of the stomach which had occurred some time previously in the same ward. 2nd. Calculus in the cystic or hepatic ducts, or in the gall-bladder, may simulate it; but the severe nausea and vomiting will generally enable us to make the diagnosis. 3rd. Chronic gastritis; but the absence of pain on pressure (though the spontaneous sensation of pain may be very severe), the irregular course of the disease, its intermissions, and the character of the urine, which is rather anæmic than inflammatory, will generally assist us. 4th. Cancer; but the absence of the peculiar cachexia, the emaciation, the non-existence of tumour, or of coffee-ground vomiting, will guard us from such a mistake. Dr. Budd is of opinion, that if the pain depends on organic disease, it is more severe soon after meals, or when the stomach is full; but if it is the result of functional disorder, it will only occur when the stomach is empty, and will be relieved by food; but this rule does not hold good in even a majority of cases, though attention to it is of great importance with regard to treatment, as in the first class of cases the diet should be light, easily digested, and our efforts directed to relieve irritation; while in the second class of cases, sedatives generally relieve the pain.

Gastrodynia is a disease of youth and adult life, but seldom attacks before puberty, and is generally curable, though it often continues a long time, and is very liable to relapse, particularly in persons of an irritable and nervous temperament, or in those subject to neuralgia in other parts of the body. There is no disease for which a greater number of remedies have been proposed, than for gastrodynia, and among these narcotics and sedatives hold a high place; but never commence the treatment of a case without having ascertained (as far as you can) to which of the forms above described it belongs, and then be regulated by the cause. If you are satisfied that there is an unhealthy secretion of mucus by the stomach, you should try to get rid of it, and correct the condition of the mucous membrane which secretes it. Emetics of sulphate of zinc or ipecacuanha are occasionally useful, but in most cases they are not necessary; and you may commence the treatment by two or three purges of calomel with compound colocynth pill at night, followed by neutral salts with magnesia in the morning, so as to act well on the bowels, the discharges from which are generally dark, fetid, and slimy; and you must first improve this condition before you can expect any real change for the better. You may then give an alterative dose of blue pill or calomel every second or third night, followed by a saline aperient in the morning. If a costive state of the bowels persists, Dr. Barlow advises four grains of colocynth with two of henbane every night, and the daily use of an ounce of the following cordial saline mixture, of which he speaks very highly :—

℞. Sodæ subcarbonatis, ʒiiss.; aquæ puræ, ℥viiss.; acidi sulphurici diluti, ss.; confectionis aromaticæ, ʒiss.; spiritûs menthæ piperitæ, ♏xii.

Great attention should be paid to the diet, which ought not to be too farinaceous or very liquid. Commence with good chicken-jelly or beef tea, but get them to eat some solid tender meat as soon as you can, and for drink allow weak brandy and water. Bismuth in doses of five or ten grains, either plain or combined with magnesia, often acts well; so does calumba combined with soda. These are also the cases in which nitrate of silver has often given great relief. You may commence with a quarter of a grain three times a day, combined with aloes or extract of gentian, and let it be washed down with a little water, either cold-boiled, or tepid, or warm, according to the wishes of the patient. In some cases patients complain that any cold drink causes pain, so that you must give them even their medicines in a warm menstruum. In the symptomatic form of gastrodynia, the first object is to relieve the severe pain; and for this purpose you must have recourse to the various narcotics and sedatives, the preparations of opium, morphia, belladonna. Prussic acid combined with soda or bismuth often gives great relief; so does conium and creasote. Nervous medicines are sometimes useful—as valerian, camphor, assafœtida. Dr. Aquila Smith informs me that he often gives immediate relief by making the patient eat a few blanched sweet almonds. The preparations of iron and bark are used as preventatives. Vesication over the epigastrium, and dressing it with morphia, often gives relief. The late Dr. Graves had a high opinion of stramonium in this affection; he also advised friction over the dorsal vertebræ with a stimulating liniment; and Dr. Law informs me that he often applies tincture of iodine to the spine with good effect. The diet should be tonic and substantial; in most cases meat and wine may be given. Great attention should be paid to the functions of the skin; tepid bathing, shower-baths, sea-bathing, and plenty of exercise in the open air, should be persevered in. These patients should be freed as much as possible from care, business, or study. Make them sleep on a mattress, in a well-ventilated room; give up tea, coffee, smoking, snuff, and every habit that can debilitate the nervous system; get them to mix in society; but above all things, if they can afford it, send them to the country, or to travel, or to some of the watering-places; and always endeavour to inspire hope of a certain cure, and confidence in the means, as there is a great tendency to hypochondriasis in all these cases.

Headache; Condition of Urine, and Sympathetic Affections of Dyspepsia.—One of the most common and constant symptoms of dyspepsia is a sense of *fulness* or distension of the stomach, coming on a short time after food, attended with a sense of constriction, as if the clothes were too tight, so that patients are glad to loose them, in order to get relief; and they are often much annoyed by *flatulence* and eructations of gas, with great rumbling of wind in the large intestines. If this comes on after food, it may be prevented by taking a pill of four grains of rhubarb with one of capsicum before meals; but if it comes on when the stomach is empty, give some carminative—as from thirty to forty drops of tincture of cardamoms, or compound spirit of lavender, or aromatic spirit of ammonia, in a little water, either plain or with a few grains of calcined magnesia. Constipation is another troublesome symptom, and the evacuations are generally dark, very fœtid, often slimy or pultaceous. For this you should give some mercurial, combined with colocynth or rhubarb pill, to act on the liver and large intestines, so as to cause solid evacuations; for undigested substances may remain in the cells of the colon or cœcum for a long time, even though the bowels be moved daily; but be cautious of over-purgation, for patients are often anxious to take medicine, as it gives them temporary relief, by removing unhealthy secretions, whereas our endeavour should be to prevent their formation, which is best attained by improving the functions of the liver, the stomach, intestinal canal, and the skin, which last is generally dry and rough, or covered with a greasy perspiration. These patients often complain of a peculiar dry, prickly, pungent heat in the palms of the hands and soles of the feet, especially at night, while during the day they are chilly; and the face is pale, with a heavy, dull expression. The appetite may be variously affected—often diminished, or even totally absent, especially before breakfast; or there may be nausea and loathing at the very sight of food, while at other times it may be increased or even ravenous. To restore or correct this, give

an ounce of infusion of chiretta, or half a grain of sulphate of quinine (three times a day) half an hour before meals; but when there is a disgust at food, you will find much benefit from pepsine, which generally causes an appetite; and in cases where severe pain or uneasy sensations are experienced after meals, depending on deficiency of the gastric juice, it is of much use. It should be taken immediately before meals, either in the form of powder dissolved in a spoonful of soup or sweetened water, or rolled up in a wafer, as recommended by Corvizart, Boudault, and Ballard, in doses of fifteen grains, or in drachm doses of "liquor pepticus præparatus," recommended by Dr. David Nelson, of Birmingham, which I believe is analogous to prepared rennet. Nausea and vomiting are sometimes very distressing symptoms, especially if there be much bilious fluid ejected; but you can generally give much relief by regulating the diet, acting on the bowels by enemata, and giving bicarbonate of soda in solution with dilute hydrocyanic acid, or in effervescence. Bismuth will be of use also, or creasote with aloes in pill. The tongue may present a perfectly healthy appearance, or be coated with a white fur, or be red at the tip and edges, or may be thick and œdematous, retaining the impression of the teeth; and patients often complain of a disagreeable clammy taste in the mouth, particularly in the morning, with a peculiar heavy odour from the breath. The urinary secretion varies greatly in dyspepsia: it may be scanty, of a deep red colour, and very acid, often depositing lithate of ammonia or lithic acid crystals; or it may be of a bright amber colour, very clear and acid, with a slight cloud at the bottom, formed of mucus, with minute crystals of oxalate of lime, sometimes visible to the naked eye if exposed to a bright light, but always to be seen under the microscope; or it may be of a high colour, and yet deposit a white sediment formed of phosphates, which is characteristic of a highly irritative form of dyspepsia; or it may be pale, and become alkaline shortly after being passed, depositing triple phosphate with phosphate of lime; or, finally, it may be passed frequently, and in great quantity, like pure water, when the patient labours under much nervous excitement. In the first of these conditions, Dr. Prout recommends fifteen grains of bicarbonate of soda or potash to be taken three times a day, two or three hours after meals; while to counteract the oxalate of lime, he advises the nitric or nitro-muriatic acid, from ten to twenty drops of the dilute acid half an hour before meals, in water or some bitter infusion. If the patient be much debilitated, give some preparation of iron about an hour after meals; and if there be much nervous irritability, Dr. Golding Bird recommends sulphate of zinc, in doses of a grain three times a day, made into a pill with extract of hyoscyamus or gentian, and gradually increasing the dose up to five grains—a practice which I have seen attended with much benefit. If the urine be alkaline, with deposit of phosphates, you must try to improve the general health by good diet, wine, or brandy and water, tonic medicines, acids, quinine, or iron; and if the secretion of urine be pale, copious, and frequent, you should give valerianate of zinc, or equal parts of infusions of valerian and bark. Besides these symptoms, which we may refer directly to the digestive organs, there are many others which we term sympathetic, or affecting distant parts—such as cough, palpitation, intermission of the pulse, anomalous pains in various parts of the body. A "stomach cough" may be generally distinguished from that depending on disease of the lungs by the uneasy sensation referred to the epigastrium, and by its being hard, loud, and coming on in paroxysms generally after meals, and early in the morning. Palpitation is often a very troublesome symptom, and gives much alarm to the patient, as he supposes he is a victim to disease of the heart. Dr. Abercrombie states that "the slightest, and perhaps the most common form, consists of a momentary feeling of rolling or tumbling motion of the heart, like that which is produced by a sudden surprise or fright; and it is accompanied by an intermission of the pulse, and sometimes by a feeling as if the heart were violently grasped." In other cases there are violent fits of palpitation, with a sense of tumult in the region of the heart, which recur frequently, with or without irregular action of this viscus; and sometimes there is an endocardial murmur, and dyspnœa, which may come on in paroxysms. An accurate physical examination will generally enable us to make our diagnosis, in which we shall be assisted by the history of the case, "by the action of the heart being natural during the intervals between the attacks, by the symptoms being most apt to occur while the patient is at rest, especially after meals, not being

increased by bodily exercise, but rather relieved by it, and by the result of treatment directed to the stomach." But you should remember that dyspepsia is often a result of tubercular disease of the lungs, or of organic disease of the heart; so be always careful in your examination, and cautious in your diagnosis. There is another class of symptoms which have reference to the nervous system, and also cause much distress—such as vertigo, noise in the ears, confusion of thought, defective memory, spectral illusions, irritability of temper, vacillation, despondency; in fact, a state of hypochondriasis, with a want of mental and physical energy often amounting to complete prostration, or rather a sense of debility often more distressing than actual weakness. I have not time to do more than merely enumerate these symptoms for you, and I must refer you for a full description to the admirable work of Dr. James Johnson, who, having been himself a martyr to dyspepsia, has graphically described them.

The causes of dyspepsia are numerous and various; they may be divided into physical and moral; of the first class, some act directly on the stomach itself, owing to errors of diet, whether in regard to quantity or quality. The diet may have been insufficient, either from poverty or prolonged fasting, or may have been rich, indigestible, and in too great quantity, or strong tea may have been indulged in. Dyspepsia may be sympathetically induced from disease in distant parts of the body, as we constantly see in the case of females, in whom it is often excited by some derangement in the uterine system, whether it be leucorrhœa, dysmenorrhœa, ulceration of the os uteri, chlorosis, hysteria, pregnancy, or be caused by lactation. We meet with it also in cases of tubercular disease of the lungs, in diseases of the kidneys and bladder, and also in cases of stricture of the urethra, in piles, and in protracted or exhausting hemorrhages. The second class of causes depend on the state of the nervous system, and mostly occur in persons of the upper classes of society, and of an irritable, nervous temperament, usually a result of exciting or depressing passions; or in those who speculate largely, or who have met with reverses of fortune, and have suffered much anxiety of mind, particularly if the patient be of sedentary habits, and inclined to eat too much animal food, or indulge in pastry. The state of the blood, also, has much influence in causing dyspepsia, whether it depends on mere congestion, as we daily see in cases of diseases of the heart or in capillary bronchitis, especially when occurring in aged or debilitated persons; or whether there be actual impurity of the blood, from defective action of some of the excreting organs, as in cases of congestion or disease of the liver, when the elements of the bile are not properly eliminated; or if there be any disease of the kidneys which interferes with their functions, as we see in Bright's disease, when the urea and other constituents of the urine are retained in the blood, and have even been detected in the matters vomited. Dyspepsia often depends on some fault in what Dr. Prout has termed secondary assimilation, when, though we cannot detect any visible structural change, yet that there is some defect in the nutritive processes is indicated principally by the various conditions of the urine, that I have already referred to. It is probable, however, that some changes occur in the pepsine glands which exercise an influence over the quantity and quality of the gastric juice; for notwithstanding the important and accurate anatomical as well as microscopical researches of Dr. Handfield Jones and others, into the intimate structure of the stomach, there are, possibly, deviations from health of the gastric mucous membrane, and of the epithelial cells, which we have not yet detected, but which are the causes of deranged digestion.—*Dublin Hospital Gazette, Aug.* 1, *June* 1, *and Oct.* 1, 1857, *pp.* 225, 169, 293.

33.—ON SOME DISEASES OF THE LIVER.

By Dr. George Budd, F.R.S., King's College, London.

[Dr. Budd, in the third edition of his work on "Diseases of the Liver," lately published, sums up with great care and perspicuity the more important researches of Lehmann and Bernard upon the chemical properties and microscopical appearances of the blood, as it passes through the liver.]

A most important novelty described by Dr. Budd, is the relation recently found to exist between hydatid tumours and other forms of cystic entozoa on the one hand, and tapeworm on the other. Küchenmeister caused dogs to eat fresh and living cysticerci, and found, upon examination, that in the intestines of these quadrupeds, the cystoid worms were converted into tapeworms. Siebold also found that the cysticercus pisiformis, which is common in the liver and mesentery of the hare and rabbit, the cysticercus tenuicollis, common in the mesentery of sheep and oxen, the cysticercus cellulosæ, often found in great numbers in pork, and the cœnurus cerebralis—are all developed in the intestine of the dog into a long tapeworm, the tænia serrata of the dog, which Siebold considers to be identical with the tænia solium of man, and also with the tænia marginata of the wolf, the tænia crassipes of the fox, and the tænia intermedia of the polecat, all these being varieties of the same worm. By killing dogs at different intervals after they had swallowed the cystoid worms, Siebold was able to trace their metamorphosis into tapeworms; and since the publication of his researches on the production of tapeworms from the various cystoid worms, the converse experiment has been performed, and cyst worms have been produced from the eggs of the tapeworm. In one of these experiments, M. Haubner, a Professor in the Veterinary College at Dresden, gave joints of the tapeworm of the dog, containing fully-developed eggs, to several lambs, and in the course of a fortnight all these lambs had the staggers, while other lambs in the same fold remained in good health. The staggering lambs were killed after different intervals, and in their brains and other parts of their bodies, cystoid worms were found in different stages of development. In another experiment, made by Professor Leuckart, of Giessen, mice were made to eat ripe joints of the tænia crassicollis of the cat, and the result was the development of cysticercus fasciolaris in the livers of the mice. Another point briefly alluded to, but not at present confirmed by Dr. Budd, is the late announcement by Virchow, that the "scrofulous enlargement" described by Dr. Budd, gives with a solution of iodine the chemical reaction of starch, like the so-called *amyloid* bodies occasionally found in the brain, a circumstance which has led Virchow to propose the name of *amyloid degeneration* to this condition of the liver.

Cirrhosis of the Liver.—[The following passage from the author's work is well worth perusal.]

"The emaciation and the loss of strength that occur in cirrhosis may depend, in part, on direct injury to the stomach and other organs, caused by the habits of life that induce cirrhosis; but they are, no doubt, mainly owing to atrophy of the lobular substance of the liver, and to the impediment which the disease creates to the passage of blood through the liver, and to the escape of bile from it. The obstructed circulation impedes the absorption of water and other nutritive substances by the veins of the stomach and intestines; keeps the mucous membrane of this portion of the intestinal canal, and the glands associated with it, in a permanent state of congestion, and thus enfeebles the digestive power; and when the obstruction is so great that the blood is diverted from its appointed channel, it must tend directly to produce an impure condition of the blood. That part of the portal blood which does not pass through the liver, but finds another way back to the heart, cannot be freed from the principles of bile, and be otherwise purified, as it should be, and must therefore contaminate, to a certain degree, the whole mass of blood with which it is mixed. Impediment to the escape of biliary matter from the lobules and through the small bile-ducts, impairs nutrition directly, by causing a deficiency of bile in the intestinal canal, and a bilious impregnation of the blood; and it has a more remote injurious effect, by being an additional cause of atrophy of the lobular substance. Destruction of the lobular substance of the liver tends to impair nutrition, by rendering the secretion of bile defective, and thus deranging the work of the intestinal canal, and by leading directly to an unhealthy and impoverished condition of the blood, which, in consequence of this destruction of the lobular substance, is imperfectly filtered in the liver, and does not undergo there those reparative changes which the action of the healthy liver causes. Whenever, from any cause, much of the lobular substance of the liver is destroyed, a state of anemia results."

In treating of the therapeutics of cirrhosis, Dr. Budd strongly insists upon the necessity of the early adoption of remedial measures, although from the insidious

nature of the malady it often escapes notice, or is neglected by the patient. It is well known that Dr. Budd considers cirrhosis to be a species of inflammation, and his treatment is depletory, in accordance with this view. But in the more advanced stages, as where ascites has supervened, treatment may still be serviceable.

"Even at this stage of the disease, if there have been any recent inflammatory action in the liver, and there be lymph within it that can still be absorbed, good may result from small doses of blue pill or iodide of potassium, which may be given in conjunction with mild diuretics. If diuretics be given alone, they generally fail of effect, because when, from cirrhosis or any other condition, much ascites exists, the liquid in the peritoneal sac compresses the kidneys, and prevents their action. The influence of this pressure is made very manifest by the operation of tapping. It is almost constantly found that when by tapping the liquid in the belly is withdrawn, there is a more abundant secretion of urine, and that the quantity of urine again diminishes as the liquid in the belly collects again."

Again:—

"In a few instances, after mercury and diuretics have failed, I have seen the ascites removed for a time by hydragogue purgatives. A good purgative of this class is an electuary made by mixing cream of tartar and jalap, in equal parts, with confection of senna, and it is best given, as are all medicines of similar action, in a single dose in the morning before breakfast, as it then, besides the drain it causes from the coats of the bowel, only sweeps away the refuse of digestion: whereas, if it be given in divided doses during the day, it sweeps away the food that has been digested, but the nutritious particles of which have not been absorbed. It sometimes happens, especially in hard drinkers, that a disposition to nausea exists in the morning, and the medicine is then best given at night. The action of hydragogue purgatives is much increased by giving them in a concentrated form, and by restricting as much as possible the quantity of liquids consumed by the patient."—*Med. Times and Gazette, June* 27, 1857, *p.* 649.

34.—*Treatment of Diarrhœa.* By W. O. Markham, Esq.—[The author recommends the use of the compound ipecacuanha powder in cases of ordinary diarrhœa.]

It may seem very superfluous to speak of so well-known an article of the pharmacopœia; but I do so for two reasons:—First, because I do not find, on inquiry among professional friends, that the drug is one in common use for the purpose indicated; and, secondly, because having used it for many years, and rather extensively, I can safely state, that I know no other remedy equal in efficacy to it, as a cure for diarrhœa.

Five grains in powder, given in a teaspoonful of gruel, and repeated after each loose stool, is the simplest way of its administration. The powder acts better than the pills of it, for these are apt to become hard and indigestible.

Of the theory of action of the drug I have nothing to say. It may be suggested that opium is no novel invention in diarrhœa; but in answer I must observe, that Dover's powder is not opium. All I know is, that I give the drug, and that it very rarely fails to fulfil the indication for which it is exhibited.—*Medical Times and Gazette, Aug.* 29, 1857, *p.* 231.

35.—NEW TREATMENT OF CHOLERA.—ITS ORIGIN AND CURE.

By A. C. Boate, Esq., late one of the Surgeons to Her Majesty's 6th Dragoons (Inniskillens.)

[Cholera is originated in the brain and spine by some magnetic or electrical condition of the earth and atmosphere withdrawing or suspending their influence over the various nerves of the body, particularly over the pneumogastric nerves. If these nerves are divided by artificial means, the identical symptoms of cholera are produced.]

In the Appendix to the Report of the Committee for Scientific Inquiries in relation to the Cholera epidemic, 1854, Table XXXVII., showing the electricity of the atmosphere at the several stations, is most interesting, and affords a great field for further study and observation. I maintain that it is the negative electricity that acts on the sympathetic brain and spine, and produces cholera. On turning

to page 103 of the same Report, I find a passage which strongly bears me out—viz., "I much regret that the electrometer observations began too late to afford any decided results. They would, however, seem to show that a deficiency of electricity prevailed during the time when the disease was at its height, and that at low stations, as compared with higher, a deficiency was likewise to be observed, which fully accounts for the prevalence of cholera in low districts."

There are two forms of this direful malady: Cholera Mitior, analogous to English cholera; and Cholera Asphyxia, or suffocative cholera, the latter being the most dangerous. Complete paralysis or suspension of the brain's influence over the various nerves of the body, particularly of the pneumogastric nerves, exists in this special form of the disease. The lungs do not perform their proper functions; the vitality of the blood is not maintained; consequently the duration of the disease depends upon the complete or incomplete paralysis of these nerves.

While, in certain localities, the electrical condition of the earth and atmosphere is *predisposing* only, the immediately *exciting* causes are many and various, effluvia being amongst the most prominent; 2nd, excesses of any kind; 3rd, evaporation arising from damp floors, cess-pools, &c.; 4th, purgatives taken for some other complaint. I cannot give a better example of immunity from the cholera epidemic than the Newcastle Garrison when I was in charge, and I attributed it solely to guarding the soldiers against the exciting causes, and, by a strict surveillance over their habits, doing away with effluvia; and cautioning them against the danger of not making immediate application on the appearance of diarrhœa.

The first symptoms are vomiting and purging—exactly what takes place when the brain is injured; but I have frequently noticed that patients generally complain of a tightness of the chest, sometimes amounting to pain, with a difficulty of respiration, and occasionally uneasy sensations in the head previous to these; after which come cramp, loss of voice, &c. &c.

Having briefly stated what the predisposing and exciting causes are, I beg to add a few observations, as well as my experience, relative to its *treatment*. What can this be, in a disease in which the door to medication is in most instances closed by the early paralysis of the gastric nerves? The physician must have recourse to a remedy possessing an instantaneous effect over the brain and nerves. Now, every one knows the effect of an emetic, acting directly on the brain, exciting a more vigorous action of the powers of the constitution, as is proved by the amendment of the pulse, and other favourable appearances, immediately after vomiting. Although produced by debility of the brain in the first instance, it has the effect of reflecting strength back on the constitution.

This is the groundwork of my treatment in every stage of cholera:—First begin with an emetic, followed (after the action of the emetic has ceased) by an opiate—say thirty to forty minims of tincture of opium, and thirty minims of sulphuric ether, to two ounces of water. If this does not rest on the stomach, a pill, composed of three grains of calomel and one grain of opium, is to be given. This will often remain on the stomach when nothing else will. But what is to be done in collapse, when the pulse is small and thready, respiration almost suspended, and lividity pervading the whole system (the circulation being impeded owing to the contracted state of the lungs)? Chloroform is the grand remedy. But how does it act, or how should it be administered? It is given by inhalation, carefully marking or watching the effect upon the pulse. Now, the first effect of chloroform is a strong stimulant, the pulse becoming full and bounding, where before its use it could hardly be felt. You must prolong its application as long as the pulse is full, and the moment it begins to sink, withdraw the chloroform; alternately repeating and withdrawing the stimulant until the patient lapses off to sleep. I may also add, that in a case of incessant vomiting, where nothing will remain on the stomach, a full opiate, say thirty or forty minims of tincture of opium in combination with half a drachm of ether, may be given in a little water, and then the chloroform administered which instantly checks the vomiting: and this action being kept up, the opiate becomes absorbed, and sleep very soon follows.

This I maintain is a *new treatment*, and one which I invariably adopted during the cholera epidemic at Varna (where I was in charge of her Majesty's 6th Dragoons), and with such success, as the medical return will show (vide "Army Medical Board Returns"), that out of 62 cases of genuine Asiatic cholera, I only lost

nine patients (about 14 per cent.) I will illustrate this treatment by giving a few cases.

Private ——, 6th Dragoons, was attacked in the night with severe diarrhœa, quickly followed by vomiting, great mental depression, &c. Did not make any application to the medical officer until the next day. On the morning following his attack his comrades gave him brandy, pepper, &c. He allowed the disease to go on until the evening, when my hospital sergeant heard that he was ill, and reported the case to me. I visited the man's tent, which was a small one, pitched at the back of his master's hall-tent, only a few yards intervening. I found him in a state of extreme collapse, lividity pervading his whole system; incessant vomiting, with frequent diarrhœa, and pulse not to be felt. I ordered him to hospital instantly, administered a mustard emetic, which had the desired effect, and then applied the chloroform, having first given him a full opiate in conjunction with a stimulant. The pulse, which at first appeared small and thread-like, gradually became larger, stronger, and fuller. I kept up the action of the chloroform until the pulse began to diminish, and then withdrew it, again to repeat it after a short interval. The vomiting and diarrhœa ceased, and sleep followed. The patient remained asleep for about four hours, and awoke complaining of great thirst, which I have invariably remarked in all cases of cholera. I always kept a large quantity of solution of bicarbonate of soda with a little ginger, which I think makes the nearest approach to the saline ingredients of the blood, the ginger being merely to stimulate and warm the stomach and intestinal canal, &c. This I allowed the patient to partake of freely. He had slight consecutive fever, but was quite recovered and at his duty on the sixth day.

Sergeant ——, 6th Dragoons; admitted into hospital, complaining of uneasy sensations in the head, slight pain, or tightness of the chest, as he termed it; vomited frequently during my examination of him; stated that he had suffered from diarrhœa the greater part of the night; great mental depression; pupils much dilated; pulse very small, and with difficulty could be felt; in fact, the usual symptoms that characterize this hitherto formidable disease. Ordered, a mustard emetic; as soon as the action of the emetic ceased, a full opiate, with ether, in a little water. Vomiting and diarrhœa ceased, and sleep followed. At his duty on the third day.

Sergeant Major ——, 6th Dragoons (treated in his tent); was attacked with diarrhœa in the middle of the night, quickly followed by vomiting; stated he drank a good deal of native wine (sheerah) on the previous evening. This was a good example of excess as an exciting cause. His countenance was shrunken and nearly livid; voice scarcely audible; pulse hardly to be felt. A mustard emetic was administered, which did not act for some time, but when it did, it was effectual, a large quantity of bilious secretion coming away. A full opiate, with sulphuric ether, was administered, and immediately followed by the inhalation of the chloroform, to prevent the rejection of the opiate and stimulant. The pulse rose full and bounding, lividity disappeared, and I had the gratification to find my patient in a slumber after a few minutes. Ultimately he did well, and was quite restored to health in a few days. I could add several other cases, more or less severe than these, but I think it would be superfluous.

I did not take any notes of the number of *diarrhœal* cases, which were very frequent; as many as fifty or sixty patients (in my regiment) made application daily to hospital for medicine to check this disease. The most successful formula I found to stay it was a mixture composed of the following ingredients:—Prepared chalk, aromatic confection, tincture of catechu, tincture of kino, gum Arabic mucilage, tincture of opium, distilled water. Also a pill composed of three grains of calomel, one grain of opium, and one grain of aromatic confection.

These were the formulæ which I also used in Newcastle-on-Tyne in 1853, when there were nearly 500 cases of diarrhœa admitted into the hospital, and not a single death. Compare this with the report of the London hospitals of 1854, and truth will speak for itself.

In Dr. Babington's Report of the Cholera amongst the Black Sea Fleet, furnished to the Board of Health, a great deal of ingenuity is shown, but, alas! after comparing the reports of almost all the medical officers of the Black Sea Fleet, he concludes thus:—"But no measure of success seems to have followed any mode

of treatment, so as to recommend it emphatically beyond the rest." Some of the suggestions of Dr. Babington's compilation are, he states, very valuable, and it affords much food for reflection on a disease, the nature of which remains so obscure.

In putting these few notes together, I have carefully avoided enlarging this little treatise, or adding any superfluous matter, thereby making it easily comprehended. Already the symptoms are, I am confident, but too evident to those who ever once saw cholera; and, besides, they are so elaborately described by so many authors. My object is merely to introduce a *new treatment* for this hitherto formidable disease, and which has been so far successful, that I deem it but right to make it known for humanity's sake.

I think a great deal of useful information may yet be derived from carefully-made observations with the electrometer at *night*, for invariably every case of cholera that I had to deal with in my extensive field of practice occurred between twelve and three o'clock at night. Not having an electrometer in my possession, either at Newcastle-on-Tyne or at Varna, in Turkey, I made no observations.

Composition of chloroform: $C_2 H Cl_3$. It is improperly called a *terchloride* of formyl, its real composition being as I have stated above. Its action is *stimulant*, *sedative*, and *anti-spasmodic*, the identical three objects essentially necessary to recover a cholera patient.

[Mr. E. C. Willis of Plumstead, in a letter to the 'Lancet,' observes, that there are, in the preceding able paper by Mr. Boate, certain points open to objection.]

"Mr. Boate says that cholera originates in a suspension of the powers of the par vagum, owing to the effect which a deficiency in the elasticity of the earth and atmosphere produces on the cerebro-spinal ganglia. That such a deficiency really universally exists when the disease is present, he has yet to show; that, if existing, it is sufficient to produce cholera, he has yet to prove; and he has also to make his theory consistent with the known peculiarities of the cause of this malady, its method of travelling slowly, but surely, in definite directions, and the phenomena which attend its aggression.

"But with regard to his assertions concerning the paralysis of the pneumogastrics, I submit that he is in error. Section of these nerves will not produce symptoms of cholera. Vomiting may take place, but this is by no means an invariable symptom, and, where it does occur, is owing to the irritation produced by the operation, and passes off, so that after a time the animal will take food, and even digest it, as is shown in Dr. Reid's experiments. I have divided the pneumogastrics myself, and neither vomiting nor purging followed, nor at first was there any apparent discomfort beyond what might have been expected from an operation of any kind. The pneumogastrics, as regards their relation to the alimentary canal, are motor nerves of the œsophagus and stomach, and, if they have any connexion with the mucous membrane also, at all events their paralysis does not primarily interfere with digestion. It is their irritation, not their paralysis, that occasions the vomiting and other symptoms which they assist in producing, both in cholera and in various other diseases. Such irritation may be due to centric or eccentric disturbance of the cerebro-spinal functions, and in either case the pectoral symptoms referred to by Mr. Boat might be present.

"The exciting causes mentioned will induce irritation of the vagi, without the existence of any predisposing electrical condition in the earth or atmosphere. Vomiting and purging follow the inhalation of any noxious exhalation, the introduction of an improper ingestum, or anything which offends the organic system, just as they do a blow on the head or any other direct injury to the brain and spine.

"With regard to the comparison which Mr. Boate draws between his own success in the treatment of diarrhœa and that of the London hospitals, I do not think he takes into account the different class of patients with whom he has to deal. Soldiers under strict military discipline, duly cautioned, and almost obliged to report themselves as soon as the first symptoms make their appearance, are scarcely to be brought in opposition to the worn-out, and in many instances half-fed, mechanics of the metropolis, who, with their wives and children, often seek assistance only when the time for help has passed and the powers of life are failing."
—*Lancet, Aug.* 8 *and* 22, 1857, *pp.* 136, 200.

36.—REPORT OF A CASE OF ASIATIC CHOLERA.

By Dr. Henry Madge, London.

On Wednesday, August 12th, I was called to a gentleman in Gower-street, who had the following symptoms:—Complete prostration, speaking in a whisper; violent cramps, particularly in the feet, legs, and abdomen; finger-nails purple, and the skin of the fingers shrivelled and cold, like those of a dead subject; the arms, legs, and feet were also quite cold; the eyes were dimmed and sunken, and, as there was labouring for breath, the face wore a most anxious expression; pulse feeble and irregular, with sickness and profuse evacuations of rice-water stools. The patient was evidently sinking from an attack of real Asiatic cholera. I immediately ordered hot water to the feet, warm flannels to the legs and arms, placed a large mustard poultice over the whole abdominal region, administered stimulants and prescribed the following mixture:—Acetate of lead, fifteen grains; acetic acid, half a drachm; tincture of opium, half a drachm; tincture of capsicum, eight minims; and peppermint-water to six ounces; two tablespoonfuls to be taken immediately.

On calling again, in an hour, I met Mr. Weekes, of Bloomsbury, the regular medical attendant, and we had the satisfaction of finding that the mixture had kept down, and that, although previously the evacuations had been constant, they appeared now to have ceased. The other symptoms had undergone no material change: the patient's whispers were scarcely audible, tongue dry and furred, urine high-coloured, and in small dribbling quantities. The mixture was ordered to be taken every hour; we also ordered iced water to allay thirst, port-wine, and the constant application of warmth to the extremities. In the evening, reaction had commenced; pulse quick, but still weak and irregular; returning warmth; slight sickness, but no diarrhœa; cramps in feet and legs still severe. The above treatment was persevered in during the night.

The next day, August 13th, we found reaction perfectly established; voice still husky and indistinct; cramps in legs troublesome; pulse improved, tongue furred and accompanied with considerable thirst. Mixture to be taken less frequently, and iced water more freely. Late in the day a copious, dark, watery stool came away, having the appearance of discoloured rice-water, which may probably have been owing to the action of disengaged gas on the lead taken into the system. Mixture to be taken at shorter intervals.

Aug. 14th. Has had a good night; perspired profusely; no diarrhœa; tongue still coated, but moist; pulse almost natural; passed a little more urine; ominous rumbling sounds in the intestinal canal, but without pain. Ordered beef-tea and moderate quantities of port-wine with arrowroot; a dose of the mixture at night, to be repeated, if necessary.

15th. Improved in every respect; bowels have not acted. To discontinue the mixture. Ordered mercury with chalk at bed-time.

16th. Continues to improve. Bowels not having acted, ordered castor-oil.

17th. Quite convalescent; feels weak, but able to get up and walk about. The castor-oil has acted three times; stools dark, bilious, and partially firm; appetite returning. Ordered quinine mixture, and a little carefully got-up meat diet.

As the object of publishing cases of this kind is to draw from them practical deductions, I should be glad to be permitted to offer one or two remarks. The mixture I employed in this case, and which acted so admirably, was recommended to me by a practitioner in 1854. I then held an appointment under the Local Board of Health, and besides several hundred cases of diarrhœa and choleraic diarrhœa, I treated several severe cases of genuine cholera. Six of the number terminated fatally, but in the majority of them I proved the efficacy of the means employed in this case. There was one extreme case, at the bottom of Rathbone-place, which two medical men and others will well remember yielded to the same treatment; not, however, before I was fortunate enough to subdue a violent sickness by giving creasote. As an astringent, the plumbi acetas seems to act quicker and better in solution than in pills, and it is an advantage to be able to combine with it the tincture of capsicum, which certainly seems to stimulate and comfort the patient, whilst it assists the opium in relieving painful spasms. In 1839 I

attended cases of cholera at Bow, and was in the habit of giving calomel. After that fearful visitation had passed away, on reviewing my cases, I entertained the opinion that calomel was injurious: my subsequent experience has only tended to confirm this opinion. To me, it has appeared to add to the depression of the patient at a time when he requires to be supported and even stimulated; and from its well-known effects in other cases, it must necessarily keep up the excessive irritation in the mucous coat of the intestines, and the consequent serous effusion which helps to kill the patient. In the opportunities I have had (many of them at Guy's) of seeing post-mortem examinations in cases of cholera, the gall-bladder has invariably been found distended with bile. It appears to have been prevented from emptying itself into the usual channel by a spasmodic closure of its neck, or from the ductus communis and its connexions partaking of the general spasm affecting the system. If this is the case, what good can calomel do? The liver does not want stimulating—there is already an abundance of bile. Is it not better, in collapse, and in the dangerous stages of the disease, to trust to stimulants, astringents, and antispasmodics? The latter will bring about what is supposed to be the effect of mercury in such cases—the passage of bile. When the severe symptoms are over, the internal organs having passed through a state of congestion, a mild mercurial appears to be advisable, and, as in the foregoing case, will probably act well. Of course there will be differences of opinion on these views; but the case I have related will serve to show, first, that our old enemy, the cholera, is amongst us; and secondly, that in a very severe form, in the stage of collapse, it has been met and treated successfully.—*Lancet, Aug.* 22, 1857, *p.* 190.

37.—*A new Premonitory Symptom in Cholera.*—The Academy of Sciences has received from Dr. Poznanski an important communication, in which it is stated—1. That during the prevalence of cholera it frequently happens that the pulse is extremely low, and reduced to 45 or even 42 in persons apparently in perfect health. 2. That this symptom is unaccompanied by any other denoting a morbid state. 3. That when the pulse is low, the blood becomes dark and viscous; while in persons whose pulse is in a normal state during the epidemic, the pulse is perfectly healthy. 4. The cholera only attacks those that have previously experienced a diminution in their pulse. 5. That this diminution, which often occurs weeks before the regular attack, may be considered a pathognomonic symptom of the approach of cholera. 6. That those who have experienced the diminution in question had always escaped the disease whenever they have followed a regimen calculated to accelerate the circulation. 7. That the falling off of the pulse, and therefore the predisposition to the disease, are in general proportional to the want of energy in the circulation of the blood and to the excess of atmospheric pressure. 8. That this diminution does not occur in healthy subjects when the epidemic has ceased.—*British Med. Journal, Aug.* 1, 1857, *p.* 657.

DISEASES OF THE URINARY ORGANS.

38.—ON THE NATURE AND ORIGIN OF RENAL DISEASE.

By Dr. J. Russell, Lecturer on Pathology at Sydenham College, Birmingham, and formerly Senior Physician to the Birmingham General Dispensary.

[The author, in the following remarks, confines himself to that group of diseases characterized by the presence of albumen in the urine, by a serious diminution in the daily excretions of urinary salts, and by the passage from the kidney of certain peculiar casts; together with a tendency to the effusion of anasarcous fluid into the cellular tissue of the body.]

In discussing this subject, the first inquiry must relate to those morbid changes in the kidneys which constitute the disease. These have been recently described by Dr. George Johnson, in his work on 'Diseases of the Kidney.' The *primary* changes vary in the different forms of the disease; in one form, the epithelial cells, which perform the function of secretion, are shrivelled and broken up, and the uriniferous tubules are, in consequence, either shrunk and wasted, or, being bared

of their epithelial lining, are dilated to various degrees; in another form of the disease, the place of the cells is occupied by a homogeneous material, apparently of a fibrinous character: and in a third, to which the name of Bright's disease is sometimes restricted, these epithelial cells either remain loaded with fat, or, having been ruptured by excessive distension, fill the tubules with their oily contents. These primary changes are speedily followed by others, both in the tissues of the kidney itself, and in other organs of the body; but such changes, being of a *secondary* nature, do not concern our present inquiry.

The structural changes I have thus briefly indicated have one important character in common, which has a special bearing upon the opinion I shall suggest as to their nature and origin, viz., that they all commence in the *secreting instruments* of the kidney, the glandular epithelial cells which line the convoluted tubules; it is the *cortical portion* of the organ which receives the stress of the disease; the straight tubes which constitute the medullary portion, and which are little besides ducts, are affected to a much less extent, and often escape altogether. Further, it is important to observe that the changes in question are degenerative in their character, and in this respect are directly opposed to that creation of additional secreting tissue which constitutes true hypertrophy of the kidney, and which occurs in the course of the natural effort made by a *healthy* kidney to do double work, when its fellow is disabled by injury or disease; they thus satisfactorily agree with the prominent symptom of the disease—namely, the lessened amount of salts secreted in the urine.

The explanation of these various structural changes, which is given by Dr. Johnson, and to which I now wish to direct attention, is the following. The morbid changes take their origin in alteration of function in the parts diseased, viz., in the epithelial cells. In consequence of exposure to unhealthy influences of various kinds, the nutrition of the blood becomes depraved, and that fluid becomes loaded with unhealthy matters, which must be eliminated from the body; the labour of effecting this is thrown, in great measure, upon the kidneys, and materials of an unhealthy character are thus being continually brought for excretion to the cells of those organs; consequently, the function of the cells becomes perverted; their natural food, the excreta, is changed. As a necessary result their nutrition becomes impaired, and morbid alterations of structure are induced. Such alterations may be effected gradually, almost insensibly, if the corresponding change of function be induced gradually; on the other hand, if the work of the organ be suddenly changed, the alteration of kidney structure will be attended by a relative commotion in the organ itself, and secondarily, in the system at large. By what singular modification in the operation of the causes the different forms of the disease are produced, we are just as ignorant as we are of the causes which determine fatty degeneration in an organ at one time, wasting at another, and calcareous transformation at another. Much, no doubt, is due to the original constitution of the patient. Thus, one variety is most frequently met with in the strumous constitution.

Dr. Johnson's explanation of the disease seems to me to be supported by the great pathological law, that in every organ and tissue nutrition follows function, is related to it, and regulated by it; and I think it derives support, not only from the history of the patient's life and habits, and from the nature of the influences which seem to stand to the disease in the relation of cause, but also from the analogy of corresponding changes in other organs of the body. I shall beg leave to submit a few arguments of each class.

First, I will refer to the arguments derived from the analogy of other organs. Until lately, inflammation has been constantly referred to as the one important source in which most of the changes of structure, with which we are familiar, take their rise: and we now most naturally look for traces of this process in explaining any disease which falls under our observation. Late researches, however, have revealed to us a very large number of organic changes, which are entirely independent of inflammation. The large class of hypertrophies, properly so called—those, namely, in which the enlargement is entirely due to increase in the natural tissue of an organ—exhibit to us instances of large increase of dimension and weight, without any inflammation having been concerned in the process. On the other hand, in the class of atrophies, there is equal change in the opposite

direction: and, although inflammation, like any other influence which depraves nutrition, may produce atrophy, yet, in a vast majority of instances, the change has been entirely independent of that process.

But it may be said, there is no alteration of structure in the instances cited; nothing but augmented or diminished bulk. Look, then, at the still larger class of degenerations; here are found muscular, arterial, cartilaginous, osseous, fibrous, and other tissues transmuted entirely into fat or earthy matter, or withered into mere fibro-cellular tissue, and yet inflammation has had no part in the matter. Look again at cancerous and tubercular formations, and at the non-malignant tumours; what numberless examples of extensive structural change, independent of inflammation, do they afford. And yet there is hardly one of the changes to which I have alluded which has not afforded, at one time or other, a battle-field for the question, of how far inflammation has been concerned in its production;—the contest relating to the origin of tubercle, and of the atheroma of arteries, whether or not it is connected with inflammation, is one of our own day.

Since we have discarded the inflammatory origin of these and similar changes, it is a necessary question, in what do they originate? where is their starting point? I think it will not be doubted that in a large majority of the instances I have quoted, the first step in the process of change is connected with the *function* of the organ itself. In the hypertrophied heart, the first in the series of changes is a demand made upon the organ for increased exertion, in consequence of some obstacle retarding the onward current of the blood; just as conception takes place *before* the natural increase of the womb in pregnancy commences, thereby creating fresh demand on the nutrition of that organ. On the other hand, in the old woman we find the ovaries atrophied, in the palsied limb we find the muscles wasted or degenerated; here again the first step has been a change in the function of the organ affected, an abrogation or serious diminution of that particular function, just as in the womb lessened requirement, consequent upon delivery, precedes the shrinking which follows that event.

Perhaps the most striking exemplification of this waiting of nutrition upon function, is afforded by the changes which are gradually effected in the tissue of every organ during the period of decline from manhood to old age; as the time for mental and bodily activity passes away, the standard of nutrition in the entire body is lowered, and every form of degenerative change may be met with in the various tissues of the body. The great tendency of our present pathology to explain change of structure by previous alteration of function is exemplified in the hypothesis concerning the nature of cancer, now most in favour;—that the cells of which cancerous tumours are made up are designed to eliminate from the blood, in the way of secretion, some peculiar matter injurious to the system, which generates the well known cancerous cachexia. This, though only a hypothesis, indicates the present course of opinion in pathology.

One more illustration I am tempted to add, as being more immediately connected with the subject in hand; I refer to the deteriorating influence which is exerted upon the nutrition of any organ, by an *unhealthy* demand made upon it for exertion. Let the hypertrophied heart be over-taxed, and nutrition fails any longer to answer the demand: let the bodily frame be subjected to a long-continued and excessive demand upon its energy, and in place of the healthy increase in nutrition which work in moderation excites, there is actual wasting, a state of cachexia; and similarly, to an over-taxed brain must be referred a long list of serious nervous diseases.

In the various cases I have now cited, it is to the function of the organ chiefly concerned, that we direct the largest part of our attention, in endeavouring to cure the disease; in like manner, if the same explanation be correctly applied to the degenerations in the kidney cells which exist in Bright's disease, it must be our business, whether for prevention or for cure, to pay attention first to keeping the function of the organ in a healthy state, by removing those various causes which impose excessive or unnatural labour upon the secreting cells.

But here another question presents itself: it cannot be denied that certain forms of renal disease set in with every symptom of active congestion, if not of acute inflammation, such symptoms being present from the very beginning: this is the *case in* what is commonly called acute dropsy; and even in the chronic form,

acute congestion may be readily excited by very trifling causes. Such being the case, it becomes incumbent upon those who deny the inflammatory origin of these diseases, to explain their relation to this state of vascular excitement. This relation we are in a better position to understand at the present day, when the near connection which undoubtedly exists between inflammation and the ordinary processes of nutrition, is beginning to be perceived. Formerly, when our attention was fixed too exclusively upon the prominent symptoms of inflammation, the vascular turgescence, and the effused fluids, we were in the habit of regarding inflammation as a disease quite *sui generis;* we had neglected to observe that in the perfectly natural course of things, wonderful variations in the degree of vascular activity are being continually produced; we had forgotten that lymph, in no respect distinguishable from the product of inflammation, is poured out in the quiet process of the repair of wounds and fractures. In these and other effects we now percieve how nearly inflammation is related to nutrition, although it must be confessed that very much yet remains to be done before the exact nature of this relation is fully understood.

These remarks will find their application in the active congestions which are not unfrequently associated at some time or other, with diseases of the kidney. The blood-vessels are the great agents in nutrition: in this respect they are second only to the proper vital action of the tissues themselves; but sound pathology requires it to be remembered that the vessels do hold the second, and not the first place, as was at one time the belief. The whole subject of cell developement has placed in its correct position the relation held by the blood-vessels to every process of nutrition; for in watching the healing of a wound, for instance, we find progress effected in the transformation of the cells in the effused lymph, before any vessels have made their appearance: and in the embryo the blood is by no means the earliest tissue developed.

This secondary, but still most intimate relation of the blood-vessels to the tissues, affords means of rendering a satisfactory explanation of many cases of active congestion and inflammation, an explanation, too, which I think may be correctly applied to the case of the kidneys; for it must follow that no change can by possibility be effected in the nutrition of any organ or tissue without inducing as a necessary consequence, a corresponding change in the circulation of the part. Determination of blood to the womb is set up as soon as the process of increased growth, or natural hypertrophy, which is instituted by conception, commences; determination to the neighbourhood of a wound is established as soon as the process of granulation has fairly begun. So long as the demand, in obedience to which this determination of blood takes place, is within the limits of health, the excitement of the blood-vessels, though often considerable, is in perfect agreement with the normal course of nutrition; but such is not the case when the stimulus is carried beyond this point. When the infant is put to the breast, the distended veins give intimation of the increase which immediately takes place in the rush of blood with the obvious intent of furnishing matter for the secretion of milk; but if the natural stimulus excited by the contact of the child's lips with the nipple be exaggerated by a crack or excoriation, the determination of blood runs on to inflammation: in the same manner, in any secreting organ, in the mucous membrane of the bowels, for instance, a moderate purgative increases the intestinal secretions, but a drastic purge gives rise to congestion, possibly to inflammation, with transudation of the constituent elements of the blood: or, to bring the analogy still nearer to our present subject, a large dose of a diuretic, and particularly of the stronger ones, will be followed by congestion of the kidney. Now, in all of these cases, the organ is stated to have been over stimulated; speaking more accurately, the congestion is brought on by an excessive amount of the self-same stimulus, which, in a moderate degree, had simply produced healthy rush of blood, by quickening the healthy function to a state of greater activity.

There is also another influence in operation in many stages of renal disease, which equally tends to the production of congestion. We know that an intimate relation exists between the blood and the capillary vessels of every organ, although we are not able to explain this relation. Natural variations in the circulation of different organs are entirely inexplicable by the mere impulse of the heart. How otherwise could we account for the necessary determination of blood to the womb

only at certain particular periods of the individual's life? How could we explain the rush to a secreting organ to supply the material of secretion? This relation is special to every organ, and upon its maintenance freedom of circulation through each organ mainly depends; therefore, when it is disturbed in any way, stagnation of blood or congestion must follow. The phenomena of asphyxia afford a very good illustration of this fact. The admission of air to the lungs being cut off, the blood in the capillaries of the lungs can no longer be aerated; consequently, the relation which this blood ought to bear to those capillaries is altered, and arrest of the capillary circulation is the consequence, as evidenced by the loaded pulmonary artery and right side of the heart, contrasted with the empty condition of the pulmonary veins.

The same cause which operates in asphyxia, impurity of blood, operates also in disease of the kidney, and must naturally tend to increase the difficulty of the circulation through their substance; and this cause has produced a very interesting secondary change, pointed out by Dr. Johnson—namely, hypertrophy of the small arteries—such hypertrophy constituting as evident a measure of retarded circulation in the particular organ, as hypertrophy of the heart does of the obstacle presented by a narrowed orifice.

From the analogies which I have now submitted to consideration, I think I am allowed to conclude that alterations of function in any organ have a natural tendency to induce alterations of structure, varying more and more widely, according to the extent to which the function is forced to deviate from the limits of health; also that such alterations of structure may be effected either with or without vascular excitement; but that, when the vascular excitement is present, it very often exists as a secondary result. How far this conclusion extends, we are yet ignorant; we are only just beginning to understand the phenomena of inflammation, and although we can now discover their origin in the cause I have been particularly referring to, this explanation can only apply to a very limited number of cases; it is, however, if true, of the highest value, as affording a safe position from which to start in investigating those forms of inflammation which are yet so little understood.

I must, however, add, that when once this vascular excitement has been established, it may come to play a prominent part in the case; being itself the product of an unnatural state, and being, therefore, in itself unnatural, it may easily proceed to extreme lengths; it may even absorb the principal share of our attention, and require special and active treatment; but still, such treatment must be conducted with a constant reference to the function, in the disorder of which the vascular excitement originated. An obvious illustration is afforded by our treatment of acute dropsy, whether after scarlatina, or exposure to cold, or from any other cause; we are often obliged to employ active antiphlogistic treatment, as cupping, leeches, counter irritation, &c.; but at the same time we remember the origin of the congestion in disordered function of the kidney, and we immediately endeavour to ease the labouring organ through the medium of the skin and of the bowels; indeed, the latter branch of the treatment may not unfrequently render the former either entirely unnecessary, or required to a much less extent.

It only remains that I justify the assertion, that the condition of the kidneys, in patients who are suffering from the disease in question, is such as to have involved an unnatural state of their function. Such justification must be gained from the history of the patients. I think I may safely assert, that whenever a cause has been fairly made out, it is such as must bear directly upon the function of the kidneys; thus in the forms of acute dropsy, the sudden suppression of the cutaneous, and possibly in some cases, of other secretions, makes a sudden and unnatural demand upon the kidneys. In cases of scarlatina, of cholera, of typhus, we have the element of sudden admixture of poison with the blood, in addition, in many cases at least, to unfavourable influences acting upon the skin; disorder of the urinary functions, active congestion and its attendants, are the result; and a rapid and irregular development of epithelial cells, as manifested by the urine during life, and by the kidney after death, affords visible testimony to the labour in which the organ is engaged. More frequently the cause appears of such a nature as to act gradually, but to maintain its action through a long duration of time; the gouty diathesis and habitual intemperance constitute, perhaps, the most

frequent causes of chronic renal disease, of the class we are considering; here the relation to the kidneys is also distinct; the poison of gout is either itself lithic acid, or is closely allied to that substance, and alcohol also has a direct affinity for the kidney, acting as a diuretic, and being actually capable of detection in the urine.

I shall not detain you whilst I enumerate other unfavourable influences which seem to act as causes: various unhealthy modes of life, different forms of cachexia, particularly the strumous, and of blood poisoning, &c.; like those to which I have already alluded, they variously derange the constitution of the blood, either by directly introducing unhealthy matters, or no doubt more frequently by altering its nutritive changes; in some of these instances, we have to depend upon analogy for explaining the operation of the supposed cause.

I ought not to omit to add, that in explaining the operation of these various causes, we have generally to take into the account those various circumstances which predispose the organs to take on disease; without these having existed previously, many of the morbific influences we have alluded to would often fail in effecting so serious a disorder of function. It is matter of easy observation that the cells of the kidney tubes are exceedingly sensitive to all unhealthy states of the general system; in various forms of cachexia, in chronic disease, in complaints which originate in poisoned blood, such as the fevers, pyæmia, &c., the microscope readily detects very visible changes in the kidney epithelium, even though there have been no signs of disorder in the organs during life. In these appearances, which a small amount of microscopic experience will enable any one to verify for himself, we see perhaps the very commencement of organic change, and we can readily conceive that if the unfavourable condition in which these appearances have originated, should act more powerfully at any time, permanent changes in these delicate organs would be the result.

In conclusion, I can only make a passing reference to the analogy presented by the liver in its diseases. In certain of the structural changes to which that organ is subject, we recognise great resemblance to those which take place in the kidney; and this resemblance becomes closer in exact proportion as we discover more of the nature and operation of the causes of liver disease.—*British Med. Journal*, *May* 2, 1857, *p.* 359.

39.—ON THE URIC, OXALIC, AND SACCHARINE DIATHESES.

By Dr. G. Owen Rees, F.R.S., Physician to Guy's Hospital.

[The changes which occur in urine after secretion, and before expulsion from the body, and which changes occur as the result of local actions in the tubes and receptacles through which it passes, is a point which has hitherto been sadly overlooked.]

In the lectures I had the honour to deliver last year, I made the statement, that, were it not for the uric acid diathesis, urinary calculus would be as rare a disease as tetanus, and I traced the existence of oxalate of lime and of the earthy phosphates in the urine, or as constituents of calculi, to changes effected after secretion. I showed how urine containing the urates was convertible, out of the body (by the application of an increased temperature), into urine containing a deposit of oxalate of lime, and I adduced facts and arguments showing that the presence either of uric acid or the oxalate of lime in the urinary canals would lead to inflammation of the mucous surfaces and the consequent effusion of an alkaline fluid, and that this would cause a precipitation of the earthy phosphates. All these evils were regarded as dependent, so far as the secreted urine was concerned, on the presence of an excessive quantity of uric acid or of an urate in the blood, and therefore on the *uric* diathesis, notwithstanding that the urine, as evacuated, and after passing over the mucous surfaces, might deposit *oxalate of lime or earthy phosphates*. The oxalic and the phosphatic diatheses were ignored, the uric acid diathesis being the only one recognised.

It is obvious that if the above be true, an entirely new view of treatment must be taken. The kidney, in fact, must be regarded as always secreting an acid urine, unless ingesta (in the form of food or medicine) be given to change its character.

An utter neglect of the pathology of the urinary mucous membrane has led to all the perplexity in which the question of phosphatic disease has become involved. The experiment I made in the case of a patient with deficient anterior abdominal parietes, as detailed in former lectures, showed how easily the secreted urine had its acidity neutralized, as it flowed from the ureter over an inflamed mucous surface. The crucial experiment also detailed, of causing a patient who was passing alkaline urine, to pass urine of acid reaction, by administering alkalies, is, again, quite conclusive as to the mucous surfaces being in fault, and as to their possessing the power of changing acid urine to alkalinity when in an inflamed state. Let us follow this change, and describe the therapeutical action of alkaline treatment. We will suppose we have (as I have often had) a patient afflicted with the uric acid diathesis. He tells you his history: how he passed red sand in quantity, and perhaps a small calculus escaped from his kidney and found its way through the urethra. This state of things, after a time, he may say, changed. He began occasionally to pass *alkaline urine* and the *phosphates*. Sometimes during the same day he will tell you he has passed both red sand and the phosphates. Old sufferers have more than once brought me specimens of such deposits. He may tell you his urine next became almost constantly alkaline: that acids in every form were administered, in order to obviate this, but that he has gone on from bad to worse. The bladder you will find is now involved, and if he have no calculus there, it is not the fault of those who have prescribed acid treatment.

Now here we have a man passing an alkaline urine; there is phosphatic deposit, and two views may be taken of this case—the one, that long disease has caused the phosphatic diathesis to appear, and that the urine is secreted alkaline by the kidney; the other view being, that the uric acid diathesis is still present, and that the mucous surfaces have become inflamed, and are neutralizing, by their secretion, every drop of urine, and thus the phosphates are precipitated. According to the first view, an acid plan of treatment might be beneficial; according to the second, alkalies are indicated.

Let us put the case to proof. We give small doses of citrate of potash. These are to be carefully administered, and as the case improves, the dose is to be lessened. During this treatment, the urine still continues alkaline, but the earthy phosphates appear in less quantity. They are gradually being held in solution by the bicarbonate of potash which exists in the urine, owing to the destruction of the citrate in the system. The urine is now secreted of alkaline reaction, and the inflamed mucous surfaces being no longer irritated by an acid fluid, gradually recover themselves, and eventually cease to pour out their alkaline liquor, and we obtain from the urethra the healthy and acid secretion of the kidney. There is no conceivable theory bearing reference to the phosphatic diathesis of Prout and his followers which can explain this result.

The existence of an uric acid diathesis is a matter now proved—that is to say, we have satisfactorily established the presence of a state of system in which uric acid and its combinations appear in the blood in abnormal quantity. This, which was long matter of belief, has been clearly demonstrated by the experiments of Dr. Garrod; and to the presence of uric acid in the blood I believe we may trace nearly all the evils to which calculous subjects are liable, for those constituents of urinary calculi and of urinary deposits, which do not admit of being traced up to its presence, are extremely rare—viz., cystine, silica, uric oxide, &c. Regarding diathesis as expressive of a power or force predisposing the organism to some especial form of disease, I propose next to consider a state of urine which has been considered indicative of a diathesis, but which, I believe, bears no relation whatever to an especial disease, but is produced by many. In every case, however, it has reference to one and the same action taking place in the organism—viz., emaciation. Writers have described the excretion of an excess of urea as an urinary disease, as an affection not necessarily connected with any organ or organs of the body, but having reference to a peculiar state of system not of necessity engrafted on any organic affection capable of detection by physical examination or by symptomatology. According to this view, in fact, the urine containing an excess of urea is the disease, and the therapeutical considerations are to follow without further inquiry. Such has been the practice in these cases, and the patient has had *the gratification* of knowing he suffers from azoturia, or excess of nitrogenous

matter in the urine. With this he of course connects no idea whatever, nor is it desirable he should; but the misfortune is, that the profession have had quite as little acquaintance with the subject as the patients, which is also not very desirable.

It is now some years since I first had my attention directed to these cases. By degrees I learned how extremely rare this diseased state of urine was in anything like an excessive form. The cases I saw, it is true, yielded an urine of high specific gravity, and very rich in urea; and I found a state of debility which might or might not be removed by remedies, and in the one case that the urine improved, and in the other it did not. Lengthened observation showed me, that many of these cases did badly; symptoms of grave disease occurring, and phthisis or other organic mischief showing itself at the close.

It naturally occurred to me, under these circumstances, to suspect that this azoturia was nothing more than a symptom, not of any special form of disease, nor of any diathesis, but of a condition common to many diseases. When emaciation occurs, then, from any cause whatever, we may expect to find this azoturia present. The advantage of detecting it is great, if it be regarded in its proper bearings; but if it be looked upon as a disease *in itself*, the practitioner had better far be without the discriminating power on which he may pride himself, inasmuch as, content with his discovery, he may cease to inquire into the case as he would do were his attention less fixed on the urine.

It has several times happened, that I have seen patients who were described as suffering from azoturia. The urine has been observed carefully, the quantity passed during twenty-four hours, and the specific gravity, noted daily, and the cause of the disease considered to consist in the prevalence of a peculiar diathesis. The patients have presented all the peculiarities which systematic writers describe as indicative of this drain on the system. On inquiring into such cases, however, I have nearly always been able to discover some more or less localized disease to which all the symptoms might be traced—some disease attended with emaciation, and, therefore, as a consequence, productive of the highly-animalized urine. It is not very long ago that the symptom of azoturia so engrossed the attention of an examiner of the urine, and so entirely connected itself in his mind with a peculiar diathesis, that advanced and eventually fatal phthisis was entirely overlooked. This occurred in the case of a gentleman, pursuing professional avocations with great zeal, and who, observing his muscular power gradually on the decrease, became anxious as to his condition. The urine was examined, and declared to indicace azoturia; unfortunately, that discovery was considered, as it has been constantly considered, and is still considered, sufficient guide to treatment. In consequence of this, physical examination of the great cavities of the body had, I found, never been carefully made. Here, then, the indications of phthisis, so important to detect at an early period of the disease, altogether escaped notice. As consumption advanced, the azoturia became aggravated, and I was eventually called in merely to condemn the case as hopeless.

The emaciation sometimes occurring during chronic disease of the brain, is also attended with this discharge of an additional quantity of solid matter; and if the state of the urine distract attention from the true seat of disease, great mischief may be done, as the remedies in vogue for the relief of azoturia—viz., opiates and other narcotics, are such as often greatly aggravate the cerebral affection. In certain neuralgic cases, also, this urine indicative of wasting is met with. Here, however, the error does not lead to much evil; the patient may be treated according to the rules prescribed for azoturia with advantage, and if the neuralgia (as is very likely) be relieved by opiates, the theory of diathesis perhaps may be considered supported by the results obtained, and the neuralgia thought to have depended on azoturia. I saw a case of this kind lately, which is now going on well enough, under the treatment which was adopted in order to remove the tendency to a large excretion of urea. The neuralgia and the azoturia will, I fear, however, in this case, eventually be shown to have depended on some obscure internal disease, which physical examination is at present unable to detect.

When examining the specific gravity of urine, I would caution observers not to conclude that healthy urine is never passed much above the specific gravity of 1022, and that anything above 1026 or 7 must necessarily be regarded with sus-

picion. Nearly all healthy men pass, at some period of the day, an urine above the highest point just mentioned, and very often, *shortly after a full meal*, the specific gravity rises to 1030 and 32. This, too, will occur in persons of great mental and physical activity, and when in the enjoyment of the highest health.

I must not omit to direct attention to the cases which have been quoted at different times as illustrative of azoturia. They all, as far as I have been able to discover, contain a narration of symptoms favouring the position I have taken. They speak of pains of a severe character in various parts of the body, and these are in many instances accompanied by other indications highly suggestive of important latent disease.

When speaking on the subject of diathesis, I cannot refrain from introducing some remarks having reference to the subject so ably treated in the Gulstonian Lectures of this season. The old classification placing diabetes amongst urinary diseases has so completely held sway up to the present time, that the subject of the saccharine diathesis naturally suggests itself in this place. Those who have studied the works of Prout will be familiar with the idea which that chemist connected with the term "saccharine diathesis," and cannot fail to observe how completely all the opinions he advanced regarding it, appear subverted by the interesting discoveries of M. Bernard. From the moment those discoveries were published, our views, of necessity, underwent a change, and however far we may be even now from a full and correct interpretation of the phenomena of saccharine diabetes, we still feel perfect confidence that we have made a step in advance.

It is not my intention to enter upon the etiology of diabetes mellitus further than to remind you that the views of M. Bernard, ably enunciated by your Gulstonian lecturer, have shown that the liver, contributing as it does to the formation of sugar in the normal state of the organism, may be regarded, under certain diseased conditions, as the producer of the diabetic state. That in point of fact, according to Bernard, we have not now to determine how a substance, foreign to the healthy constitution of the blood, becomes engendered in the system, but merely to inquire into the causes producing, on the one hand, an over-activity in the sugar-forming action of the liver, or, on the other, the diminution of the destructive power apparently possessed by the blood in health over that sugar when it has mingled with the circulating fluid.

Now, all this is clear enough, were the sugar secreted by the liver, and that produced by injuring the base of the fourth ventricle, identical with that existing in the urine of true diabetes. This, however, is not the case, and we are not, therefore, so nearly about to unravel the difficulty as we might at first be inclined to believe.

About two years ago I took the opportunity of obtaining blood from the hepatic veins of a dog, in order to determine the presence of sugar; for, like many others, I was at first a little incredulous. By the assistance of my friend, Mr. Hilton, this was effected without much difficulty.

On examining the blood obtained in this way, I found, it is true, that it yielded me sugar; but there was a peculiarity in the reaction of the tests, which led me to suspect I was not dealing with the same sugar as that contained in the urine of diabetes. It was quite impossible for me at the time to undertake a chemical investigation of the subject, and I was not sufficiently satisfied with my results to venture on publication. Some months ago I mentioned my suspicions to my friend, Dr. Pavy, who has thrown much light on this interesting subject, and he told me that the same doubt had occurred to him some time since, and he immediately showed me from his note-books, that he had worked the question out very satisfactorily, though he had not published on the point. Having Dr. Pavy's permission to do so, I will now detail the results of his investigations. It appears that the principal point of difference between these sugars consists in the greater facility possessed by the hepatic sugar, and by the sugar of *artificial* diabetes, of undergoing destruction by contact with animal tissue. This has been shown by an experiment made on the sugar of *artificial* diabetes, comparing the result with that obtained by similarly treating grape sugar and *true* diabetic sugar. The experiments were conducted as follows:—Three vessels were taken. In the first, a quantity of pounded liver, obtained from a healthy dog, was placed with a solution of the urine of artificial diabetes; the specific gravity of the solution was

1045. In the second vessel was placed pounded liver with a solution of common grape sugar, of specific gravity 1040. In the third was placed pounded liver with a solution of extract of true diabetic urine, of specific gravity 1040. The pounded liver was used (as any other animal matter might have been) merely to induce changes in the elements of these saccharine principles by its presence. The three mixtures were now set aside for nine days. At the end of that time, on submitting them to examination by Barreswil's solution, it was found that the artificial diabetic sugar had entirely disappeared, while the reactions were obtained in all their completeness from the two other solutions. Experiments made with the same solutions, substituting blood for pounded liver, led to the same results, showing a power of resisting decomposition on the part of grape sugar and *true* diabetic sugar, far exceeding that existing in sugar obtained by the production of diabetes artificially.

There seems little doubt that the sugar of diabetes is a higher quality of the principle, and that it can preserve its atomic arrangement with far greater force than the hepatic variety. A power, however, seems to reside in the blood, which after *some length of time* eventually destroys, not only hepatic sugar and that of diabetes artificially produced, but even that of true diabetes mellitus. Thus Dr. Pavy's experiments show that if the blood taken from a diabetic be allowed to coagulate, and the serum then be separated from the crassamentum, we can detect scarcely any evidence from the latter after a very long exposure. In the serum, however, it can be detected in quantity till decomposition is thoroughly set in. For some considerable time both crassamentum and serum give full evidence, however, which contrasts strongly with the reaction of blood taken fresh from the right ventricle in health, and which contains *hepatic* sugar, for here the sugar disappears almost immediately the separation into serum and clot is completed. It is almost certain that when we produce the artificial diabetic state by operation, we obtain in the urine the hepatic sugar of the liver. It is also proved that this sugar of *artificial* diabetes is not the same as the sugar of *true* diabetes.

Now, of course, were these sugars identical, we might consider true saccharine diabetes as a disease in which the sugar-forming property of the liver became abnormally active; or, on the other hand, a disease in which normal sugar was formed in the liver in usual quantity, but that the blood had lost the power of destroying it when so formed, and that it therefore appeared in the urine.

The results I have detailed place us, however, in a very different position. We know now that true diabetic sugar is destructible only with great difficulty, and that it is not the same as ordinary hepatic sugar. The question will then arise—are we to regard the sugar of diabetic urine as a modification of that poured into the blood by the hepatic veins in health, or, on the other hand, as a product of disease bearing no relation whatever to the sugar of the liver?

To those who have studied the subject of sugar in its chemical relations, who are acquainted with its varieties and the facility with which these are convertible into each other by the most simple processes, there will be no difficulty in believing that the sugar of diabetes may be easily derived from that produced in the liver in health. Late experimenters on the sugar obtained from the vegetable kingdom have shown how easily transmutations are thus effected, and chemical properties developed or abstracted by simple contact with materials apparently possessing anything but chemical activity. No one can fail to be struck, for instance, with the curious fact, that the sugar contained in fruits possesses a certain action on light, influencing polarization, which action is precisely reversed in the sugar obtained by *crystallization* from the very same source. Thus, the gummy kind of sugar obtained from grapes possesses the property of *left-handed* circular polarization; but if we allow this sugar to lie exposed, a kind of imperfect crystallization occurs throughout the mass; and if we collect the granular crystals so formed, we find we have in these a sugar differing materially from that originally extracted from the fruit. Its chemical constitution is not the same. Its constitution is $C_{12}\ H_{14}\ O_{14}$, instead of $C_{12}\ H_{12}\ O_{12}$; and when examined optically, it is found to possess the property of *right-handed* circular polarization. The change appears to be affected here by some constituent of the vegetable juice exercising its influence as crystallization goes on—probably the acids play an important part. Now, the liver, owing to some diseased action, may be supposed, in diabetes, to produce a sugar differing

from that of health—a sugar which cannot be destroyed by the changes taking place naturally in the blood—changes rapidly affecting and destroying healthy hepatic sugar.

The phenomena of diabetes mellitus are, then, not quite so simple as the experiments and discoveries of Bernard would at a first view make them appear: and we have yet to determine the causes in action for the formation of this abnormal sugar. Does the presence of a different ferment interfere—even as we observe catalyses productive of varying results out of the body—may not an analogous action be going on in the liver? and, if so, what may be the nature of the ferment productive of disease, and whence is it derived? Are we to look to the portal blood for the ferment, or controlling influence which forms the less destructible sugar? And is it owing to this diseased state of the blood that the liver, even though unaffected, is unable to cause the changes occurring in health?

But we need not have recourse to the theory of a ferment. The portal blood may present such principles to the liver as are convertible into the *true diabetic sugar*. So far as we can yet determine, then, the whole phenomena of diabetic disease may eventually be traced to an abnormal state of the bile, gastric juice, and pancreatic secretion, any one or all of which may interfere with the formation of healthy products in the portal blood, and so overpower a healthy liver in the discharge of its office. Analogy would certainly, however, rather direct us to conclude that in diabetes the function of the liver becomes altered under the influence of some cause as yet unknown. Bernard has proved that the organ in health has a very strong transformative action on grape sugar: and so powerful is this, that we should almost be entitled to conclude, even in the event of the portal blood bringing diabetic sugar, ready prepared, into the hepatic circulation, that it would be metamorphosed by the liver into normal *hepatic* sugar before it could reach the cava through the hepatic veins.

These results, then, taken together, render it probable that we are to look for the cause of diabetes mellitus in a disturbed state of the hepatic function, not in an increase of *natural* action, but in an action varying in *kind*. We see that in health the liver would reduce proximate animal principles to a normal hepatic sugar, and in the perversion of force occurring in diabetes mellitus, we have a product given us approaching in character, it is true, to the normal sugar, but by no means identical with it. There is great facility for theorising with respect to the agencies in operation in effecting this change of action. As vegetable juices contain principles which, by simple contact, can alter the chemical and optical qualities of the sugar first generated in the fruit, how easy to believe that the elaborate fluids contained in the several parts of the circulatory system of the liver may do the same. We know that acids are active in the vegetable kingdom —we know that the liver substance is acid—may not an over acid state cause the production of this abnormal sugar? or may not even a too slow circulation through the organ (by allowing too long contact with acid matter) bring about disease? These are questions requiring much consideration.

In reflecting on the phenomena of this important disease, we are naturally led to consider the anatomical relations of the organs most obviously concerned in its causation; and the stomach and liver must more especially present themselves to our notice. The position of these organs—situate as they are in the immediate vicinity of the central masses of the sympathetic, the semilunar ganglia, and the splanchnic nerves, and supplied also with branches having immediate connexion with the cerebro-spinal system,—is in itself suggestive of the high importance of the offices discharged by them, of their sympathies and close relation. In this part, then, of the living and moving organism, a most intimate union is effected between the sympathetic and cerebro-spinal systems—systems presenting a curious and doubtless intentionally-different arrangement as regards their chemical relations, and one which has been, as far as I can ascertain, entirely overlooked by physiologists; an arrangement having most certainly a deep meaning, and one which I fully believe is to throw light on many obscure problems in medical science. I allude to the distribution of the ultimate fibrillæ of the sympathetic and cerebro-spinal systems. Thus the ultimate extremities of the sympathetic are almost entirely spread over parts possessing an alkaline reaction, while precisely the opposite is the case with the fibrillæ of the cerebro-spinal system. The former

lie in mucous and serous surfaces, and in the blood-vessels bathed with alkaline fluid; the latter lie in muscular fibre and in the cutis as cutaneous nerves, and in both cases are bathed in strongly acid secretion. Now there is no part of the organism to which we can point in which these chemical opposites are so freely interwoven as in the neighbourhood of the liver and stomach; and here again we are attracted by the peculiar nature of the secretions poured out by these organs. They seem to be exceptions to the general rule—to be the parts, as it were, acted upon by the electro-chemical arrangement, and parts to which it is subservient.

My object in taking this notice of the nervous relations of the stomach and liver is merely preliminary to making a suggestion to my fellow-labourers in this important field, to look carefully to the state of what I shall presume to call the great nervous centre of the sympathetic in diabetic cases, whenever opportunity may occur. In this terrible malady, we may perhaps there find the origin of evil in some diseased condition giving rise, not to the increased activity of glycogenesis, but to a diseased state of the hepatic function, productive of the sugar we find in true diabetes,—a sugar difficultly destructible, and therefore not hepatic sugar, nor the sugar produced in the urine by puncture of the base of the fourth ventricle.—*Lancet*, *May* 30, 1857, *p.* 547.

40.—ON THE PHYSIOLOGY OF SACCHARINE URINE.

By Dr. George Harley, F.C.S., of University College, London.

[It has been shown, by Prof. Bernard, that the normal production of sugar by the liver is owing to a reflex nervous action, the stimulus being transmitted by the pneumogastric nerves to the brain, and reflected along the spinal cord and sympathetic nerves to the hepatic organ. Dr. Harley has shown, by experiment, that it is possible to produce artificial diabetes by means of stimulants introduced into the portal circulation.]

At present a great diversity of opinion seems to exist with regard to the cause of saccharine urine. Some authors speak of it as dependent upon a morbid condition of the liver, others as the result of disease in the nervous system, while a third class still adhere to the old opinion of its arising from disordered digestion. They appear altogether to ignore that one and the same symptom may spring from a multitude of causes, and that as saccharine urine is not of itself the disease, but only the most prominent symptom of a hidden complaint, it too may be the product of a variety of morbid actions quite distinct from each other, and consequently requiring diametrically opposite treatment. If, for example, the normal stimulus of the liver is exaggerated, an abnormal amount of sugar will be secreted; and if the quantity formed is greater than the amount requisite to supply the wants of the system, the excess which then acts towards the organism, as a foreign body, will be eliminated with the urine, and the disease, diabetes mellitus, established. If, on the other hand, the stimulus, instead of being exaggerated, is abnormally feeble, a less amount of sugar will be produced by the liver than the wants of the system demand, and a disease which as yet we possess no means of recognising, will be the result. The presence of sugar in the urine does not, however, necessarily prove that the glucogenic function of the hepatic organ has been exaggerated. For even in cases where only the normal amount of saccharine matter has been formed, the sugar in the blood may be present in excess, in consequence of some diseased state of the system preventing its assimilation. In such cases, the sugar will gradually accumulate in the blood, until at last the excess circulating in the body will act as a foreign material, and as such be eliminated by the urine.

Diabetes mellitus may further originate, either in such a change in the structure of the parts which secrete the saccharine matter as will admit of their performing more than the ordinary amount of labour, or in some organic change in the nerves which call the function into action, causing them to over-stimulate the sugar-forming apparatus. There are yet other two causes of diabetes sufficiently important to be here noticed. The first may originate in a foreign stimulus, in

addition to the normal one, directly applied to the liver; the second, in such an artificial irritation of the nerves, as will excite them to communicate an excessive stimulus to that organ. A good example of the latter cause is to be found in the experiment performed by Reynoso, who discovered that by making an animal breathe irritating or stimulating vapours, the reflex nervous action might be increased to an extent sufficient to produce an exaggerated secretion of sugar, and to render the animal so operated upon for a time diabetic. This fact has been adduced by Bernard as a strong proof of the correctness of his view with regard to the original of the normal reflex action. Without wishing to question the fact that irritation of the respiratory organs in animals produces a flow of saccharine urine, it may be remarked that, in making similar experiments, I have not found it so easy to arrive at the same satisfactory results which Bernard seems to have obtained. For example, I caused a robust rabbit to inhale sulphuric ether during seventeen minutes. In twenty minutes afterwards, and again in one hour and a half, the urine was tested without the slightest trace of sugar being detected. To another adult healthy rabbit, in full digestion, I slowly administered chloroform until he became completely insensible,—indeed, much difficulty was experienced in restoring him. Two hours afterwards the urine was tested for sugar, with no better success than in the previous case. I compelled another rabbit to inspire ammoniacal vapours during five minutes, without being able to produce a flow of saccharine urine.

As the ill-success attending these experiments might arise from not giving a sufficiency of the respective stimulants, I administered to other rabbits a very much larger quantity; and in one case, the most satisfactory, I succeeded in detecting a small quantity of sugar in the urine. This result was not, however, attained until after I had rendered the animal five times completely insensible within twelve hours, by a mixture of chloroform and ether. This success, although it confirms the observation of Reynoso, that the secretion of sugar may be augmented by an irritation applied to the pulmonary branches of the pneumogastric, even taken in connexion with the result of section of the cervical pneumogastric, does not appear to me to justify the conclusion of Bernard—that in the normal state, respiration is the excitor of the glucogenic function of the liver.

I believe the results of experiments clearly indicate, that IF the pneumogastric is the nerve which carries the stimulus to the brain, to be from thence transmitted by the spinal cord and splanchnic nerves to the liver, the point of departure of the stimulus is most probably in the liver itself, and that the cause of the reflex action may originate in the stimulating effect of the portal blood upon the hepatic branches of the pneumogastric nerve. If, for example, the stimulating effect of the blood of the portal vein be imitated as much as possible by injecting into that vessel substances such as alcohol, ether, chloroform, methylated spirit, or ammonia, the liver is excited to secrete an excess of sugar, and the animal operated upon is for a time rendered diabetic. The following experiment illustrates this fact very clearly.

I injected ten cubic centimètres of sulphuric ether mixed with thirty cubic centimetres of water, into one of the branches of the portal vein of a full-grown Newfoundland dog, half-an-hour after he had been fed. When he rose up after the operation he appeared intoxicated, and staggered a little as he moved about. This effect, however, soon disappeared, and in a few hours the animal looked as if nothing had been done to him. In two hours after the injection was made I passed a catheter into his bladder, but did not obtain sufficient urine to enable me to satisfy myself whether it contained sugar. Some hours afterwards, when I had obtained enough urine, I found that it readily reduced the copper in Barreswil's liquid, thus indicating the presence of saccharine matter. To assure myself that this effect was not due to the presence of any other substance, I boiled the urine in order to coagulate the albumen, of which it contained a little, then evaporated it almost to dryness, dissolved the residue in boiling alcohol, and filtered. The filtered liquid was next evaporated to drive off the alcohol, and an aqueous solution made. On testing the latter for sugar with the sulphate of copper solution, its presence was clearly indicated. Although by this method the existence of saccharine matter was rendered almost undeniable, I still wished to convince myself of its presence by some other means. The urine which the dog passed the next day was therefore fermented, and carbonic acid gas and a trace of alcohol were obtain-

ed, thus placing beyond a doubt the existence of sugar in the urine. In consequence of the dog breaking his chain and escaping, I am unable to state how long he remained diabetic; but he was certainly in that condition forty-eight hours after the injection of the sulphuric ether.

The following case, of which I shall speak very briefly, proves the presence of sugar in the urine until the third day after the operation: A very large dog (the largest I ever saw) was treated in the same way as the preceding one, but he appeared to suffer much more from the operation. His urine was so loaded with bile that I was forced to decolorize it before testing it for sugar with the tartrate of potass and copper, which however it readily reduced. I also fermented the urine, and was able to convince myself of the existence of saccharine matter in it until three days after the injection had been made.

In another case I injected nine cubic centimetres of ether, mixed with thirty cubic centimetres of water, into the portal vein of a small dog. He became insensible, and continued so during a few minutes. Twenty-four hours afterwards he was killed by section of the medulla oblongata, and in his urine the presence of sugar was detected, both by the fermentation and by the copper test.

The following case shows how ammonia has the same power as ether in causing the liver to secrete an abnormal amount of saccharine matter:

Into the portal vein of a good-sized dog, in full digestion, I injected fifteen drops of liquor ammoniæ, diluted with forty cubic centimètres of water. In twenty-four hours afterwards, on the animal being killed, his bladder was found enormously distended with urine, which not only reduced the copper in the liquid of Barreswil, but fermented most rapidly.

I have on several occasions repeated the experiment with ammonia, and have not yet met with a single unsuccessful case. Attempts with chloroform, on the other hand, are not invariably successful, as they sometimes result in the death of the animal, especially if the dose be considerable, as the following example proves:

Into the portal vein of a large sheep-dog I injected a mixture of three grammes of chloroform, ten cubic centimètres of ether, and fourteen cubic centimètres of water. He died three hours after the operation. Notwithstanding this untoward circumstance, I found that the urine remaining in his bladder after death contained a certain amount of sugar. In operating with chloroform, it is best to use only a few drops, as then the animals seem to suffer but little inconvenience.

In another experiment I injected into the portal vein of a small dog ten cubic centimètres of a liquid composed of equal parts of alcohol and water. Two hours afterwards I examined the urine, and found that it contained sugar, but in small quantity. As I had great difficulty in obtaining the urine of this animal, I ceased making any further observations on him.

Into the portal vein of another dog, of the Skye-terrier breed, I injected ten cubic centimètres of the common methylated spirit, diluted with thirty cubic centimètres of water, six hours after he had eaten a full meal. For a few minutes after the operation he appeared to be intoxicated; but this effect soon disappeared, and on the following day he seemed perfectly well. When he was killed, his bladder was found distended with pale-coloured urine, which contained a considerable amount of sugar, as was seen by the quantity of copper it reduced, and the facility with which it fermented.

It may be here mentioned that all the dogs so treated vomited after the operation, from the irritation, no doubt, of the pneumogastric nerves.

These experiments are selected from a number of others, which it is quite unnecessary to cite, as the results obtained were identical. From the total of my experiments upon this point, I conclude—firstly, that a flow of saccharine urine can be induced by means of stimulants introduced into the portal circulation, even in animals that have been fasting during twenty-four hours; and secondly, that the introduction of these stimulants sometimes produces albuminuria and an increased discharge of bile, as well as of saccharine urine.

The question now to be considered is, "In what manner do the stimulants act—is it directly, by exciting the tissue of the hepatic organ, or indirectly through the nervous system?"

The assertion, that an organ like the liver can be excited to perform its function without the intervention of the nervous system, may appear to some as unwar-

ranted. Indeed, were it not that we already know muscles to possess a contractile power altogether independent of nervous influence, I should not have dared to hazard such an opinion. Bernard, however, has clearly demonstrated, on frogs poisoned with wourali, that although the influence of the nervous system can be totally destroyed (as is seen by the muscle not contracting when the nerves are galvanized,) galvanism, applied directly to the muscular fibre itself, excites immediate and violent contraction. I have frequently had occasion to repeat this experiment, and am well satisfied of the justness of Bernard's conclusions. In the case of the muscle we have, therefore, indubitable proof that the specific property does not exist in the nerves, but in the muscle itself. And I see no reason for doubting that the various internal organs of the animal body are constructed for the performance of a special and peculiar office, and possess within themselves their specific properties, altogether independent of nervous agency; and I am further of opinion, that when we shall be as able to separate the nerve agency from the internal organs, as we are to part it from the muscles, we shall be equally successful in calling their functions into action, by the direct application of electricity, or any other stimulus, to the tissue of the organs themselves. Professor Bernard seems to take a similar view of the subject, for, speaking of my experiments, he observes that the stimulants may have acted immediately on the tissue of the liver.

There is certainly another, and apparently a more simple, mode of explaining the influence of the stimulants injected into the portal circulation upon the glucogenic function of the liver, and one which will, moreover, be more readily acceded to, because it does not oppose any of our old views regarding the specific properties of organs or of nerves. The stimulants may act by exciting the hepatic branches of the pneumogastric nerve to transmit an impression to the nervous centre, to be from thence reflected to the liver through the splanchnic nerves, and cause an increased secretion of saccharine matter; and if this be the correct explanation of their mode of action, the normal secretion of sugar is very probably caused by the stimulating effect of the nutritive materials in the portal blood. In those cases where the vena portæ is either accidentally or intentionally obliterated, the nutritive materials absorbed by the mesenteric veins will take a circuitous course towards the liver, and in that case the blood of the hepatic artery will excite the secretion of sugar. The following facts materially strengthen the view of the normal secretion of sugar being the result of a stimulus applied to the hepatic branches of the pneumogastric nerve.

During the time of digestion, the blood of the vena portæ must of necessity prove most stimulating, as it is then loaded with nutritive materials, and this happens to be exactly the period at which the greatest quantity of sugar is formed. On the other hand, the blood of the portal vein of a fasting animal contains very little nutritive material; it is, therefore, but feebly stimulant, and, consequently, during this period the secretion of sugar ought to be lessened. This, in fact, is exactly what occurs, for in a fasting animal the secretion of sugar has invariably been found to be at its minimum.

M. Bernard has pointed out that the liver of a dog nourished entirely on fat does not secrete more sugar than if the animal had received no food at all; and this is precisely what might be *à priori* expected if the above theory be correct. For in consequence of the fats, which are scarcely if at all stimulating, being absorbed by the lacteals, and entering the general circulation by the thoracic duct, without passing through the vena portæ and liver, the blood of the portal vein of a dog nourished exclusively on fat does not contain more nutritive material than that of a fasting one. It cannot, therefore, be more stimulating in the one case than in the other, and, consequently, the production of sugar ought in both cases to be at the minimum. This agrees perfectly with the facts already cited.

These data show that the foregoing hypothesis of the reflex action, which normally produces the secretion of sugar, is not based on illogical grounds. There exists, indeed, but one argument against the theory—namely, that while section of the pneumogastric nerves in the neck at once arrests the secretion of sugar, division of the same nerves below the point at which they send branches to the lungs is not followed by a similar result. This, too, is the very fact upon which Bernard founds his theory of the reflex action originating in the lungs. And upon

a cursory view of the subject, it might be considered equally valid as an objection to the former, and as a commendation to the latter hypothesis. If we examine the point of argument, however, we shall find that the mere fact of the disappearance of sugar from the liver after section of the cervical, and not after division of the thoracic pneumogastrics, is in reality of little value, since it can be readily accounted for on other grounds. The liver ceases to secrete sugar in all cases where animals are subjected to severe operations whether of the pneumogastric or of any other nerve. Indeed, whenever a febrile state of the system is set up, the glucoglenic function of the liver becomes immediately disturbed: section of the cervical pneumogastrics is, moreover, one of the severest operations to which an animal can be subjected: it is not, therefore, in the least degree surprising, that the saccharine secretion should be arrested. The same thing occurs after a variety of severe operations on different parts of the body, entirely unconnected with the nerves supplying the liver. Besides this, the slow asphyxia to which animals with divided cervical pneumogastrics are subjected, is sufficient of itself to account for the disappearance of sugar from the liver.

On the other hand, since division of the pneumogastric nerves below the lungs in general entails neither the death of the animal, nor gives rise to any symptoms of asphyxia, it is not in the least surprising that the glucogenic function of the liver should in that case suffer but a slight derangement. Another fact in favour of the statement, that the disappearance of sugar from the liver after section of the cervical pneumogastrics is simply dependent upon the severity of the operation, is to be found in the observation that an equal amount of injury done to the pneumogastric below the lungs is followed by a similar result. If, for example, the nerves are ligatured instead of divided, the animals frequently die, and in those cases no sugar is found in the liver. On examining the liver of two dogs, one of which died within sixteen, the other within twenty hours after ligature of the pneumogastrics at their entrance into the abdomen, I found that the saccharine secretion had been arrested, just as happens when the pneumogastrics are divided in the neck, and probably from an identical cause, the severity of the operation.

Thus it is seen that there really exists no valid objection to the idea of the glucogenic function of the liver being excited by means of a reflex action originating in the hepatic organ. On the other hand, there is a very important objection to the view of its originating in the lungs. For, as has already been observed, the air entering the lungs must present the same amount of stimulating action throughout the whole day: and yet the result of that supposed action is found to vary at different times.

If, then, we are unprepared to relinquish entirely the idea of the intervention of nerve agency, and to suppose that the portal blood excites the secretion of sugar by a direct stimulating action upon the tissue of the liver, we must, in absence of a better explanation of the fact, adopt the opinion that the glucogenic function in a healthy animal, under ordinary circumstances, is called forth by the stimulating action of the portal blood upon the hepatic branches of the pneumogastric nerves.

Since we now know that stimulants introduced into the portal circulation excite a flow of saccharine urine, we can easily understand how the excessive use of alcoholic drink may produce diabetes mellitus in individuals predisposed to the disease. The same fact explains to us how a disordered digestion is not unfrequently followed by saccharine urine. I may here relate a curious fact in illustration of the truth of the latter remark. About five years ago, at a time when I was much occupied in studying the physiology of diabetes, I regularly tested my urine twice a day, and on one occasion I found it to contain a small quantity of sugar. On the day in question I had partaken freely of asparagus salad; and thinking that this might perhaps be the cause of the presence of sugar, I determined to try the effects of a greater quantity. The following day, the sugar having entirely disappeared from the urine, I again partook of the same salad both in the morning and afternoon. In the evening, on testing the urine, I found very distinct indications of sugar. As the observation was to me one of great interest, I determined to make some further experiments on the subject, in order to discover how many hours this state of saccharine urine would continue. During two

days I eat large quantities of the asparagus salad, taking care to have it made as stimulating as possible with vinegar and pepper. The result was far beyond my expectations; for instead of the sugar disappearing from the urine in a few hours after I had ceased partaking of the diet in question, it continued to be secreted during several days, until I at last became very much alarmed, lest the disease had been permanently induced. On the evening of the fourth day the sugar had almost entirely disappeared; but on the fifth it returned in increased quantity —so much so, that a drop of urine falling on a boot left a distinct white spot. I could not account for the recurrence of the disease, as I had been particularly careful of my diet during the two previous days.

I have mentioned this experiment, because it appears to me that if a flow of saccharine urine be induced in a healthy person, as I consider myself to be, by disordering the digestion and over-exciting the liver, it is very probable that a cause insignificant to itself, but operating upon a predisposed constitution, might tend to produce the disease. Sugar in the urine has been found after eating cheese and other indigestible substances. It is worthy of remark, that Dr. Jessen, of Dorpat, has rendered horses diabetic by feeding them with hay damaged by moisture. M. Leconte has also found sugar in the urine of dogs after he had administered to them the nitrate of uranium. Several other substances have the same effect, and I have no doubt but that a great number more stimulants will be afterwards found to produce similar results. I cannot refrain from mentioning with what pleasure I perused a communication of M. Bernard's, entitled, On the Influence of Alcohol and Ether on the Secretions of the Digestive Canal, of the Pancreas, and of the Liver, read before the Société de Biologie. M. Bernard, instead of putting the alcohol and ether, as I had done, directly into the portal vein, introduced them, by means of a long œsophagus tube, into the duodenum of dogs, and allowed them to be absorbed through the walls of the intestine into the portal circulation. The result, as might *à priori* have been anticipated, was identical with what I had previously obtained. M. Bernard, in fact, found that six cubic centimètres of alcohol mixed with an equal amount of water was sufficient to excite the liver to secrete a large quantity of sugar, even while the animal was fasting. With ether employed in a similar manner, he obtained no less successful results. It would be very interesting and important to ascertain if the simple introduction of alcohol into the stomach would produce the same effect. It is possible that in some cases it might fail to do so, on account of its being so acted upon by the gastric juice that it had lost its stimulating properties before it reached the portal circulation. The experiment is, however, one worth making, as in many works on diabetes, drunkards are said to be peculiarly liable to the disease.—*British and Foreign Med. Chir. Review, July*, 1857, *p.* 191.

41.—ON DIABETES AND SACCHARINE CONDITIONS OF THE URINE.

By Dr. Alfred B. Garrod, Physician to University College Hospital.

[In those cases of saccharine urine, unattended with marked diuresis, when of course one principal guide to the nature of the disease is absent, slight œdema of the legs—herpetic and pruriginous eruptions, boils, and low forms of inflammation, form a group of symptoms, which may serve to guide our attention; so that the real nature of the affection may be ascertained by an examination of the urine.]

Saccharine urine is occasionally met with as a temporary occurrence in severe derangements of the digestive organs, and in chronic gout and rheumatism; and sometimes it is detected in severe and apparently functional disturbance of the nervous system.

Having passed in review the most important symptoms of this disease, I shall devote a few minutes to the consideration of the course it usually runs. I must beg of you, however, to bear in mind that my remarks at present will apply especially to the cases of confirmed melliturıa, and not to such forms of saccharine urine as appear to be temporary only in their nature, or to those where the diuresis is not well marked. I must also anticipate somewhat, by stating that, although these cases can be most materially benefited by treatment, yet few, if any, can be

really absolutely cured. A diabetic patient, notwithstanding he may live for very many years, and arrive even at old age, is one whose life is at all times precarious, standing as it were on the brink of a precipice; and accidents, diseases, and shocks of various kinds, which to a healthy person would be of little moment, to him may be the cause of the greatest apprehension and danger. It is not in my power to give instances from my own practice of patients who have been diabetic for a *very* lengthened period; but I can point to cases of six, eight, and twelve years' standing, the urine still remaining saccharine. These cases, I fear, form the exception rather than the rule; and the lengthened course of the disease, when it occurs, is probably due to the great care exercised by the patients themselves, and is seldom found among the poorer classes, who are necessarily exposed to the vicissitudes of the weather, and at the same time are seldom able to adopt such a plan of diet as is most conductive to their well-doing.

Among the secondary affections to which diabetics are liable, may be mentioned boils and carbuncles. Dr. Prout laid great stress on the connexion between a saccharine condition of the urine and the occurrence of these affections: in his article, he observes, "Diabetes very frequently (as far as my personal experience goes, *always*) *accompanies* carbuncles, and malignant boils or abscesses allied to carbuncles. This is a fact mentioned by several of the older writers, and is of great importance to surgeons, who usually have the management of these affections. Some years ago, an interesting case of this kind occurred to me. The patient was a middle-aged man, who told me, that for a long period he had been subject, at intervals of a year or two, to boils, one of which, generally on the back or neck, assumed the form of carbuncle: and that, during such attacks, he always passed a large quantity of saccharine urine. When I saw him, he was recovering from one of these carbuncular suppurations; and the urine was copious and very saccharine. I lost sight of him afterwards, and am therefore unable to state whether the urine, in the interval of the attacks, recovered its healthy character. He repeatedly assured me, however, that its quantity, after a certain time, always became quite natural." I have given this quotation at length, as I consider the subject of great importance—at the same time, one upon which, as far as my experience goes, much error is entertained. That diabetic patients are liable to boils and carbuncles, I have little doubt. Some time since, a gentlemen, a diabetic subject, who had previously consulted me, again called, after an interval of about two years. Almost the first question I asked was, "Have you managed to escape boils?" His astonishment was great, for he informed me that it was for this troublesome affection that he had come to town for advice. Such cases are by no means uncommon, and many instances will be found in the writings of Cheselden, the late Dr. Latham, and others. The point, however, to which I wish to direct attention is this, Are boils and carbuncles *necessarily* attended with a saccharine state of the urine? Dr. Prout was inclined to think they were: for he states that, as far as his personal experience went, diabetes always accompanies carbuncles and malignant boils, or abscesses allied to carbuncles. Within the last few years, I have made several observations to determine the correctness of this statement, and am quite convinced that it is erroneous. In one instance, a gentleman, aged about 70, suffering from a large carbuncle between the shoulders, from which he subsequently died, I examined the urine very carefully when the disease was fully developed: no trace of sugar was discovered. In the second, a gentleman about 60 years old, the urine, at the time when a carbuncle existed on the back of the neck, exhibited no trace of sugar. I have also made several other examinations of the urine of patients suffering from boils and carbuncles, without being able to find any saccharine impregnation. I think I am justified, therefore, in concluding that, *although boils and carbuncles are of very common occurrence in diabetic subjects, the presence of sugar in the urine of patients suffering from these affections is by no means constant, probably very rare; and that, when carbuncles and boils occur in patients not previously diabetic, sugar is very seldom found in their urine.* My colleague, Mr. Marshall, has, I believe, also examined this point in many hospital patients, and with the same result.

I have in some few instances seen *gangrene* in connexion with diabetes, and have no doubt that there is a close connexion between the two affections, in the relation of cause and effect. In one case, a female, aged 33, who appeared to have

suffered from diabetes for some years, gangrene of one leg came on a few weeks before her death. This patient had also, during the last few days of her life, a purulent discharge from the right ear; and, on *post mortem* examination, a considerable quantity of pus was found upon the membranes of the brain. Another and more interesting instance occurred in a gentleman about 68 years old, who consulted me last year, and whom I found labouring under well marked diabetic symptoms, with strongly saccharine urine. I ascertained from him that the disease had certainly been present for many years; and that, about twenty months before I saw him, he had been laid up for several weeks with gangrene of the base of one toe; the cicatrix was still well marked. My patient was totally unable to account for the affection, for he had received no blow or injury upon the part. This connexion between gangrene and diabetes appears to have been noticed by a Frenchman, M. Marchal, who has recently read a paper on the subject before the Academy of Sciences. He relates the case of a man who, after having suffered from a succession of furuncles, exhibited gangrene of a toe, without obvious cause; and his urine was found to be strongly saccharine. The gangrened part came away; the wound cicatrised; and, by means of appropriate treatment, he much improved, and enjoyed pretty good health for about the space of two years. He then neglected himself, and his diabetic affection returned; the whole foot afterwards sphacelated, and the patient died. M. Marchal relates also a case, in the practice of M. Landouzy of Rheims, of sphacelus of the lower extremities occurring in a diabetic patient; and two other instances, under the care of M. Menestrel. One, a plethoric man, aged 60, had a patch of gangrene on the thigh and back, accompanied by much thirst and saccharine urine. The second patient had a large gangrenous patch on the back of the neck, also coincident with the presence of sugar in the renal secretion. M. Marchal considers that the presence of sugar in the blood induces an inflammatory condition of the lining membrane of the blood-vessels; and that this, in connexion with the low vitality which exists in such cases, induces the gangrenous tendency, which may lead either to furuncles or gangrene.

I could bring forward several other instances of gangrene occurring in subjects who have suffered from a saccharine condition of their urine: for example, Dr. Durand Fardel states, in his work on the *Vichy Waters*, that, of two instances of diabetic patients who have died under his charge at that place, the immediate cause of death in one was gangrene of the leg; and my friend Dr. Halley also informs me that he has lost two diabetic patients from the same affection. I have taken this opportunity of dwelling a little upon the point; for though, I doubt not, the fact is familiar to many, still I think that, up to the present time, the frequent occurrence of this secondary affection has scarcely been noticed by authors, and gangrene has seldom been looked upon as one of the immediate causes of death in diabetes.

Diabetic patients, although apparently enjoying pretty good health, and feeling tolerably strong, are usually unable to bear any sudden shock to the system, such as would probably be but little felt by those in health. The late Dr. Prout informed me that, during the course of his practice, he had more than once been summoned to see diabetic patients who had travelled some long distance to consult him, and had found them either dead or dying—in his opinion the result of over fatigue. Not long ago, a lady, a diabetic subject, whom I had seen professionally, suddenly died, apparently from over fatigue, produced by watching at the bedside of a relative. That such patients have but little power to resist the attacks of febrile or inflammatory diseases, I had a very striking proof a few years since. Two diabetic patients, a male and female, were in my hospital wards at the time when an epidemic of influenza was prevalent. The male patient, a man 38 years of age, had improved very much in health during his sojourn in the institution; had gained flesh and lost most of the ordinary symptoms of the disease. His urine also had been reduced to about the average of 80 or 90 fluid ounces *per diem*, specific gravity 1031. One day he was seized with cold chills, slight sore throat, and redness of the tonsils and uvula. From this time he gradually became colder and colder, the respiration more and more difficult; and, in the course of a few days, he died, seemingly in the cold stage of a febrile attack, the system not possessing the power of reaction. At the *post mortem* examination nothing was dis-

covered capable of explaining the cause of his sudden death; no other appearances, in fact, than those met with in other diabetics. A day or so after the seizure of the man, the female patient was attacked in a similar manner; the pulse became very rapid and almost imperceptible at the wrist; and it was only by the immediate administration of large amounts of ammonia, wine, and other stimulants, that life was preserved. Many of the other patients in the same wards suffered from influenza, but exhibited simply the ordinary symptoms of that disease.

It will generally be found that patients with saccharine urine are ill able to bear injuries or surgical operations. The following case well illustrates the fact: A man, about 35 years of age, who had suffered from diabetes for several years, but in whom the disease had been kept, to a considerable degree, in abeyance, injured one of his toes from a tight boot or some such slight cause. Ulceration ensued, and, after a time, opened one of the phalangeal articulations; the toe was amputated, but the stump refused to heal, and in about three weeks the patient died from the supervention of a gangrenous form of erysipelas. Most surgeons would hesitate to perform operations upon diabetic patients, unless there is great urgency in the case. One of the most common terminations, however, of diabetes is by the occurrence of phthisis; and it is the prevalent opinion that this secondary affection constitutes the immediate cause of death in the majority of cases. I am, however, disposed to question the correctness of this opinion, although, at the same time, willing to allow that very many die from tubercular consumption. In most of the cases where I have had an opportunity of making a *post mortem* examination tubercle has been present in the lungs; in some in its advanced stages, in others but little developed; some lungs, on the other hand, have been completely free. Numerous other causes of death in diabetic subjects have been mentioned by authors; for example, Dr. Prout has noticed hepatic affection with jaundice, apoplexy, over-distension of the stomach by food, excessive in quantity or improper in quality, &c.; sometimes the patient becomes comatose, the urine suppressed, and death ensues with all the symptoms of uræmic poisoning.

There is one point connected with the supervention of secondary diseases in diabetes, to which I would wish particularly to draw attention, as it is apt, if passed over unnoticed, to be a fruitful source of error. I allude to the alteration which the urine often undergoes during these affections; it is not very uncommon to find a complete absence of sugar, a sign often regarded as favourable, generally, indeed, as a proof of the efficacy of some particular mode of treatment which a patient is pursuing at the time, but which is in fact too frequently a symptom of some secondary disease which may speedily terminate in death. I could quote many instances illustrative of this; one or two, perhaps, may not be without interest.

A gentleman, about five years since, consulted me, having all the characteristic symptoms of diabetes; urine strongly saccharine; specific gravity 1040, &c. After a few months every trace of sugar suddenly disappeared; but this apparently good sign was only induced by the rapid supervention of phthisis, of which he soon died. Within the last two months I had a patient in the hospital labouring under diabetes and phthisis in a somewhat advanced stage; and it was interesting to watch the increase and decrease of the diabetic symptoms (including the specific gravity of the urine,) alternating in an inverse ratio with those of the tubercular affection.

Lastly, I may mention the case of a lady who had suffered from diabetes for many months, but whose urine became perfectly free from sugar during, and for a short time after, a mild attack of scarlatina. The importance, then, of the knowledge of the disappearance of sugar under these circumstances cannot be too firmly insisted upon.

Occasionally diabetes assumes an intermittent or recurrent form; the patients, for a time more or less lengthened, losing all traces of sugar, and this principle again appearing in the urine. I have seen one or two cases of this form of disease; and Dr. Bence Jones has drawn particular attention to it. A very careful watching of such subjects would be exceedingly interesting, and might perhaps afford some clue to the nature of this disease, by the discovery of other phenomena which perhaps may arise at the time of the cessation of the saccharine matter from the urine. Patients who lose the sugar for a time from the occurrence of other detectable disease, cannot with propriety be considered as suffering from recurrent

diabetes; the term should be confined to those cases in which it takes place without the presence of any such secondary affection. Now and then patients are found exhibiting sugar in their urine during full digestion, but not in the intervals; and these, if not absolutely diabetic, are yet probably on the brink of this affection, and liable to have it developed from slight exciting causes.

Lastly, diabetic patients *may* permanently recover. Several instances have been related; but those well authenticated are exceedingly few in number. I cannot say I have ever seen a diabetic patient, whom I have known to have been affected with the disease in a well-marked degree, suffering, for example, from the thirst, dryness of skin, and great diuresis, *permanently* lose all traces of sugar from the urine. I have, however, been assured by patients that they were formerly diabetic, and I have been unable, after repeated examinations, to find sugar in their urine. In many of the slighter cases, where the urine has been distinctly saccharine, and the patients have experienced symptoms, doubtless arising from the morbid state of the blood, as the herpetic eruption, &c., I have seen the renal secretion become perfectly normal, and remain so as long as I have been able to keep the patients under my observation.

From what we have now shown of the liability of diabetic patients to be affected by the occurrence of secondary affections, by shocks and injuries of various kinds, and from what we have stated as to the rarity of their ever completely getting rid of the disease, I fear we cannot fail to regard the prognosis as anything but favourable: but at the same time I am convinced that in many instances life can be greatly prolonged, so as to enable the patient to reach a moderate old age. To effect this, however, the strictest attention must be paid to diet and regimen, and the avoiding of great mental exertion and over fatigue of body.

Causes of Diabetes.—I am not aware that the cases which have fallen under my notice, in which I have been able to trace what appeared to have induced the affection, will throw any new light upon the etiology of this disease; still it will be of some importance to dwell a little on this part of the subject, as, when discussing the pathology of saccharine urine, the recent physiological discoveries as to the nature of glycogenesis may perhaps be in some degree confirmed or refuted by such a study.

Dr. Prout believed that diabetes was much more frequently inherited than acquired; as far as my limited experience goes, I cannot acquiesce in this opinion. I have, indeed, known several instances in which more than one member of a family have suffered from the disease: but in by far the greater number of cases, I have seen no proof of any hereditary tendency: females appear to enjoy a greater exemption than males; but, as in gout, I should be disposed to consider this immunity due to the greater absence of powerful exciting causes: adults are, I believe, more subject to diabetes than children, although the latter are by no means exempt. With regard to temperament I can say little. As to other predisposing causes it seems to be a pretty well ascertained fact, that depressing agencies long continued, such as residence in cold, damp, and malarious districts, frequent excesses in alcoholic liquors, a poor and unwholesome diet, tend to induce the disease; but very commonly no such causes have been in operation, and the affection has come on suddenly in the midst of at least apparent good and robust health. The most commonly recognised *exciting* causes of diabetes may be divided into three classes:—

1st. Causes influencing particularly the skin.

2nd. Those affecting the nervous system.

3rd. Those influencing more particularly the mucous membrane of the alimentary canal, and the organs in connexion with this tube.

Among the first class may be mentioned, exposure to cold; drinking a large quantity of cold water when very warm: bathing when over-heated, and afterwards becoming chilled; attacks of rheumatism, and other febrile diseases, followed by exposure; the occurrence of boils, &c., but probably these last may be rather indications of already existing disease, than true causes of the affection. These form one class of exciting causes, and, perhaps, the most numerous: the majority of my hospital patients have assigned some one of these.

The second class of causes has, of late years, excited some interest, on account of recent physiological researches on the subject. Under this head are included

cases in which injury to some portion of the nervous system has occurred, or where the patient has experienced some powerful mental shock, as sudden and intense grief, or extreme mental anxiety. A case has been related to me by a very intelligent person, in which saccharine diabetes was produced by prolonged anxiety and fear, arising from the following cause:—Two gentlemen fought a duel in Holland: after the first had fired he remained for some time in a state of suspense, from his adversary's pistol once or twice missing fire. He was uninjured, but, a day or so after, became diabetic. The narrator of this case was not a professional man, but appeared to be fully conversant with the subject. That diabetes occasionally follows diseases and injuries of the nervous system, in the relation of effect and cause, seems pretty certain. Epileptics sometimes die with diabetes; I have known one instance. I have also seen examples of saccharine urine accompanying great, apparently functional, disturbance of the nervous system: and there are on record numerous instances of a diabetic state being induced by injuries to the back, concussions of the brain, and fracture of the skull. I examined and discovered sugar in the urine of a boy, a patient of my colleague, Mr. Marshall, who had a fracture of the temporal bone, produced by a blow on the mastoid process, and in whom, after death, pus was found in the cochlea and in the canal of the seventh nerve. One of my hospital patients, with confirmed diabetes, received a very severe blow on the head shortly before noticing the symptoms of his disease; and many examples of the influence of injuries to this part of the body, producing a saccharine state of the urine, have been brought before the profession by Dr. Goolden.

A third class of causes, of which, at present, little is known, consists in the introduction of irritating matters, as alcoholic fluids, indigestible food, &c., into the stomach. An extensive debauch has been followed by the disease; drinking large amounts of cider, or other diuretic fluids, have been stated to have produced the same result. A gentleman, well versed in such subjects, informs me, that he can produce, and has more than once produced saccharine urine in his own person by eating very indigestible substances, and that such a state has lasted some days. An exclusively vegetable diet has been asserted to have caused diabetes; and the case is related of a priest, at a convent in the south of France, where the diet is of this character, having acquired the disease. A case is also related of nitre, taken in a very large dose in lieu of Epsom salts, causing great diuresis and mellituria, after the symptoms of irritant poisoning had passed off. In lower animals we shall also find the introduction of alcoholic and other irritants into the duodenum, or portal vessels, is followed by a saccharine condition of the urine.

Lastly, it is affirmed, that the administration of certain remedies, as arsenic and quinine, produces, at times, a temporary impregnation of the urine with saccharine matter. Although the causes included under the third head may occasionally operate in inducing the affection, yet they by no means necessarily cause it; otherwise we should find diabetes a much more frequent disease than it actually is. With regard to the whole subject of the etiology of diabetes, and of our knowledge of the causes which will temporarily produce a saccharine state of the urine, many and more accurately ascertained data are required than we at present possess.—*British Medical Journal, April* 18, 1857, *p.* 319.

42.—ON THE TREATMENT OF DIABETES BY RENNET.

By Dr. David Nelson, late Physician to the Queen's Hospital, and Professor of Clinical Medicine in Queen's College, Birmingham.

[The principle upon which this remedy is used suggests a far more extended application of it than merely as a sort of specific in diabetes, which it is not.]

The rennet or liquor pepticus is simply a substitute for what is wanting in the body, being analogous to, or identical with, the constituents of the frame itself, with which it takes up its position, and performs its functions just as aptly as if it had been secreted within such body, and so had formed a natural portion of its scheme-work of organization.

Now, the practical application of this great principle, as a matter of instinct, has been coeval with time itself, as evidenced in the use of animal flesh, the desire for

water as a beverage, and the universal demand for salt, lime, sulphur, phosphorus, &c. &c., or their analogues, as represented in special kinds of food, such as garlic, onion, spices, fruits, and so on, each containing particular ingredients that are essential to the constitution of healthy blood, and of the other fluid and solid parts of the body. But the scientific recognition of the principle is of a date comparatively recent, and has only been the natural sequence of a more intimate knowledge of the elementary constituents of the living system, and of their relation to each other while within such system, as well as of the uses of the various complex fluids which are therein created, as it were, out of the primitive elements furnished originally from the soil or from the air. Thus, under such advanced knowledge in organic chemistry, has iron come to be *rationally* employed in cases of anæmia, gelatinoid phosphate of zinc in rickets, and various other diseases arising from mal-nutrition, cod-liver oil in deficiency of the fatty elements, ox-gall in torpidity of the liver, albumen in albuminuria, and even prepared blood itself in certain cases of defective assimilation, as affording to the stomach, like eggs and milk, all the various elements of nutrition nearly in the exact proportion in which they are wanted. We must recollect, however, that without a due supply of the healthy gastric juice, even such diets as those last mentioned could never be resolved into proper pabulum fit for the sustenance of the frame; and hence the obvious and direct utility of the rennet, or prepared liquor pepticus, in all cases where the digestive power languishes, as furnishing to a body incapable of duly producing it, that which is prepared within another body in a healthy condition. It is true that we already possess various remedies that may excite the stomach, &c., to increased activity, and gentian, columba, biberine, and all the other stomachics or appetizers, may succeed in our hands under certain circumstances; but in others again they will not. They all act in an indirect manner as gastric tonics or stimulants, and their defects will much depend upon whether the disorder be merely functional or organic. In the former case they will be efficacious; but in the latter scarcely or not at all, and perhaps even injurious. Not so with this gastric liquor, for the utility of its employment is as clear and direct as that of water itself to the thirsty animal or dried-up plant; and though it has not hitherto been regularly used for its medicinal ends, such accident is only illustrative of the old familiar fact, that plenty of knowledge may exist without being practically applied; just as the world knew of the expansive powers of steam, and of the rapid transmission of the electric fluid, before steam engines or electric telegraphs were devised. Empirically it certainly has been employed under the shape of whey-drinks, these having been considered remedial in cases of rickets, tabes, pulmonary consumption, and all the other varied forms of tuberculosis, or general granular degeneration. It has thus been exhibited just as burned sponge was wont to be used for glandular accumulations, without any just apprehension of the essence upon which its efficacy depended. And even though Reaumur and Spallanzani, as long as about eighty years ago, clearly did demonstrate to the satisfaction of themselves and others, that the gastric juice, after being extracted from the body, could dissolve meats even in glass vessels, provided they were kept at a blood heat, yet, being more devoted as physiologists than physicians, they did not advance to the next step of the philosophic ascent, by practically applying it to the art of healing, but simply noted it as a curious natural fact. In such application, however, it has, beyond all possibility of doubt, very great power, and exercises a most beneficial influence in every case of sluggish digestion, whether proceeding from the more ordinary derangements of the stomach, or from general tuberculosis, or scirrhus, or cancer. Of such cases, more or less serious in their nature, very many instances might be cited since the former paper was penned; but at present it is desirable to confine the attention to its decided efficacy in a disease usually so intractable and mortal as mellitus diabetes.

Being desirous, in these occasional papers, of pursuing this subject strictly as a physician, whose business it is to have in view ends of practical utility, the writer avoids all indulgence in mere hypotheses, or speculations as to remote causes, and confines himself to that alone which, to his mind, is clear and demonstrable. As observed in the clinical lecture already alluded to, there can be little doubt, as a matter of abstract doctrine, that the essence of genuine diabetes consists in some *deep-seated and* "secret derangement of the ganglionic innervation" of the

stomach, &c.; but at the same time morbid anatomy does not, as yet, enable us to say what the nature of such derangement exactly is. Still, however, these derangements, as we know from innumerable other parallel cases, may be seated peripherally, as well as centrically, and, keeping this hard fact in mind, we are to guard ourselves against such fallacious modes of logic as might lead us into dangerous errors—errors which, though they be mere bubbles of amusement to the closest pathologist, become, in the hands of the practising physician, if adopted by him, weapons of life and death. Thus, even granting all the facts connected with those experiments first made in France, and consequently in this country, with a view to show that diabetes was due to some lesion in a certain part of the medulla oblongata, it no more follows, because diabetic symptoms may arise on puncture of a certain spot in the digestive or respiratory track, that such diabetic disease is invariably and undoubtedly due to disease in that quarter, than that blindness, deafness, paralysis, or apnœa are constantly to be traced to lesions of the particular central lobes from which the nerves involved in these affections take their rise. But, on the other hand, the following propositions are plain, and almost undeniable, namely—

A. That all amylaceous or starchy matters within the living stomach are naturally changed, in the first instance, into sugar; which sugar is next, by a further process of digestion, converted into other complex forms fit for the nutrition of the body.

B. That, in the diabetic state, an arrest takes place at the saccharine stage of the process, apparently from a deficiency, or, what is virtually to the same purpose, a vitiation of the gastric digestive fluids, so that the sugar is absorbed as sugar, and as such expelled through the kidneys, without contributing to the nourishment of the system.

C. That languor, debility, and emaciation, &c. &c., necessarily accrue from such condition of the digestive organs, and ultimately must, and do, terminate in a mortal issue, unless means be devised to arrest or retard such downward progress.

D. That the gastric essence or essences of a healthy stomach, when well preserved from change, are capable of effecting an almost perfect digestion within the unhealthy living stomach; so that the processes are carried on to such a degree as even to insure the natural conversion of the saccharine elements into nutritive material, with a consequent increase in the bulk of the body, and a partial or total disappearance of sugar from the urine.—*Lancet, June* 6, 1857, *p.* 576.

43.—*On a Case of Diabetes, treated by the use of Rennet.* Dr. Iverson relates the case of a patient, in the lower class of life, who had well-marked diabetes, who was treated with rennet, and the details of whose case were carefully recorded day by day. As all the usual plans of treatment had been unsuccessful before the patient's admission into the hospital under Dr. Iverson's care, he made an experiment of the rennet treatment. In order to obtain as accurate a result as possible, it was determined, in the beginning of the treatment, not to alter the diet of the patient, except to recommend the greatest possible abstinence from drinking. By the table prepared by Dr. Iverson, the treatment seems to have been successful in diminishing the quantity of sugar in the urine; but from some circumstances which are not explained, the patient was seized suddenly during the progress of the case with fainting, followed by spasms, ending in death. No post-mortem examination was permitted, and the case is therefore imperfect. Notwithstanding the unfortunate result, Dr. Iverson considers that the constant diminution of the urine, both in its actual quantity and in its saccharine ingredient, was very remarkable. He shows that in the first four days, during which the patient took no medicine, the average quantity of urine voided amounted to 10·108 cubic centimètres. In the following period of seven days, during which she took the rennet, the quantity of urine reached only 7·927 cubic centimètres, with a quantity of sugar amounting to 324 grammes. In the next five days, during which she took the rennet in combination with phosphate of

soda, the average daily quantify of urine sank to 6·988 centimètres, with 250·317 grammes of sugar. The patient herself attributed to the rennet the power of allaying in some measure the burning thirst which she experienced.—*Brit. and For. Med. Chir. Review, July*, 1857, *p.* 235.

44.—SUMMARY OF SEVENTY-FIVE CASES OF ALBUMINOUS URINE.

By Dr. Thos. R. Heywood Thomson, Liverpool.

Since the pathology of the urine has of late years been more generally taken into account in the investigation of disease, and the examination of it conducted with greater care, the more frequent discovery of the albuminous condition in cases not essentially nephritic has demonstrated that this ominous feature results not so often from change of structure in the kidney—Bright's disease and its modifications—as from mere functional derangement, brought on by over-work in eliminating certain morbid products from the blood in some diseases, or while operating compensatively (so to speak) in others. In proportion, too, as the urine has been submitted to the test of the microscope, as well as the ordinary tests, have we been enabled to estimate more surely the import of those cases in which albuminuria has obtained. The mere detection of less or more flocculence on heat and nitric acid, however portentous, is comparatively valueless without the aid of histology. The former merely indicates a condition, striking the alarm-note, as it were, but the latter brings under review the products of the change, and very often shows the exact stage reached in the complication. What the crucible is to the toxicologist, we may hope the microscope will become to the investigator of this pathological state—affording conclusive evidence. To use the words of Dr. George Johnson, "a microscopic examination of the urine is essential for the formation of a correct diagnosis;" "a microscopic examination of the urine is the best and only means of ascertaining the epithelial deposit;" "for the accurate discrimination of all forms of renal disease, the microscope will be found an invaluable aid;"—or of Mr. Simon, who states, in his admirable paper on the Kidney, published in the 30th vol. of the "Transactions" of the Medical and Chirurgical Society of London, "so much more delicate is the microscopical than the chemical test, that it has twice happened to me lately, in cases of scarlatina, to find groups of blood corpuscles in the urine, when nitric acid had given no precipitate visible to the naked eye."

I have therefore thrown into a tabular form the most prominent histological features of seventy-five cases, in which the urine was found to be more or less charged with albumen,—accompanied with such few notes as were considered worthy of being jotted down at the time. The figures specifying the numbers in each section, "granular," "oily," "waxy," &c., do not always coincide with the total of each disease, as it not unfrequently happened that two or more abnormal characters were noted. So, too, the absence of heart-disease from so long a list may surprise those who know how often the two states are associated; but as in all the cases coming under my notice in which they co-existed, the kidney affection, as far as could be traced, seemed to have taken the precedence, or at least had become the most prominent, they were so noted. Even two cases of asthma, of long standing, in which valvular disease existed, together with Bright's disease, are classed in the latter, although it is possible that, could the cases have been traced *ab initio*, the asthma and valvular disease might have been proved to have led to the kidney complication.

Of ten cases of morbus Brightii, seven ran the variable, but downward course of that disease when confirmed, and terminated fatally. Three were apparently kept in check by appropriate treatment, but are still delicate. Manifest hypertrophy of the heart existed in three cases; valvular disease, with hypertrophy, in four; while three had no appreciable derangement of that organ. The waxy form of cast did not present so frequently, as we were led to expect from the experience of others. In one case, the details of which were submitted to Dr. Bence Jones, the quantity of urine passed daily during the last fortnight of life, only averaged nine ounces, and was several times as low as seven, the specific gravity continuing high, never less than 1032, and one day as high as 1045.

——	Total.	Granular Casts.	Oily Casts.	Waxy Casts.	Epithelial Casts.	Blood, free or aggregated.	Fatal.
Bright's disease	10	8	2	4	...	...	7
Scarlet fever (malignant). Eruption not well developed	2	...	...	...	...	2	1
Scarlet fever (anginosa). Eruption well developed	... 17	... ...	... ...	... 1	... 6	... 17	... ...
Scarlet fever. Eruption irregular; only out a day or two	... 4	... ...	... ...	... ...	... 2	... 4	... ...
Scarlatinal throat, without eruption	2	...	...	...	1	2	...
Rheumatism	2	...	...	...	2	2	...
Gout (obscure)	1	1	...	...	...	1	...
Typhus fever (second week)	1	...	...	1	...	1	...
Kidney, inflammation from calculus	1	...	...	...	1	1	...
Catarrh	3	...	...	1	1	2	...
Pneumonia	2	...	...	...	...	2	...
Erysipelas	1	...	...	...	1	1	...
Liver, torpor and derangement of	3	...	...	1	1	3	...
Peritonitis	1	...	...	1	...	1	...
Phthisis, in latter stages	4	...	2	1	...	...	4
Chlorosis	4	...	...	1	...	2	...
Oxaluria (strongly marked)	4	...	...	...	1	3	...
Phosphatic diathesis (strongly marked)	3	...	...	...	...	3	...
Pregnancy, latter months	2	...	...	1	...	2	...
Uterine diseases	5	...	...	...	...	5	...
Malignant disease of the bladder	1	...	...	...	...	1	1
Free use of turpentine, internally	2	...	...	...	...	2	...
	75	9	4	12	16	57	13

Under the head of scarlatina I have twenty-five cases, in which there was some amount of flocculum on heat and acid, and after the examination of a considerable number of such, I can confirm the statement of Dr. Begbie, that in almost every case of scarlatina, the urine will be found to have *traces* of albumen, but in the majority it is only to be detected by the microscope, in the shape of free or aggregated blood corpuscles. In several of the cases the eruption was so irregular and evanescent, that but for the sore-throat, spreading, amongst others, eruptively, and the albuminous condition of the urine afterwards, they would have been difficult to diagnose: while in two cases of scarlatinal throat, *without eruption*, it extended to others in the eruptive form; in both cases there was albuminuria. Two cases in which there was scarcely any eruption, or more properly speaking, suppressed, were followed by general dropsy.

Illustrative of the irregular manner in which this disease sometimes runs through a family, the subjoined may not be out of place:—The eldest son, aged sixteen, was the first attacked, and had simply scarlatinal throat and strawberry tongue, followed by albuminous urine, and excessive debility. An elder sister, aged nineteen, had the eruption strongly marked, running the usual course. A younger sister, eight years old, had the eruption only irregularly for a day and a half, with intense sore-throat. A still younger had the eruption running the usual course. Another, yet younger, had a few livid blotches, with great fever, and had sore-throat, followed by albuminuria. The youngest, a baby, had the eruption out vividly, without throat affection. Within the last month I have had two cases of checked (irregular) scarlatina, in which intense albuminuria, with

blood and *casts*, succeeded within four days, and this notwithstanding here (as in every case where scarlet fever is suspected) warm, or vapour baths, to encourage the eruption, were at once ordered.

Of the cases of rheumatism, one was complicated with urgent pericarditis, and the urine continued throughout the attack, and for nearly three months afterwards, very albuminous, with abundance of epithelial casts and some blood, but gradually subsided under the continuous use of aperients and diaphoretics. In a case of obscure gout, still under observation, the albuminous condition recurs with every threatening, and only disappears on the decline of the arthritic symptoms, eliminating great quantities of lithates and granular casts—a very undesirable symptom. Three cases are noted, in which the symptoms were those of well-marked catarrh, followed by dropsy, the urine being very albuminous, but soon losing this ominous character by restoring the free action of skin and bowels.—Three cases of very decided albuminuria had no other appreciable origin than torpor and derangement of the liver; in one case the epithelial casts were freely thrown off for many days. In two persons suffering from intense pneumonia (in one, both lungs), the albuminous condition, from free and aggregative blood corpuscles, was very strongly marked for about a week. So, too, in a case of severe general peritonitis, probably extending to the serous covering of the kidneys, the urine was charged with waxy casts and free blood discs for ten days. The not uncommon condition of albuminuria in the latter stages of phthisis was noticed in four cases: in one, where the urine was carefully examined many times, the albumen present was so considerable as to cause a jelly-like consistence on heat and acid, and yet there was no trace of tubular casts of blood, nothing but immense numbers of spermatozoa. In this case some of the fibrinous part of the blood must have drained off by the kidney. In four well-marked cases of chlorosis, accompanied in three with anæmic bruits, the urine was albuminous for a considerable time; in one, continuing three months, with waxy casts; in another, the anomalous condition just described—*i. e.*, highly albuminous urine without a trace of tubular cast or blood—existed. Iron had the usual beneficial effects with all of them. Of seven cases, where either oxaluria or a strongly-marked phosphatic diathesis was present, with albuminous urine, the blood globules were mixed with a considerable amount of vesical epithelium, as well as the characteristic crystals, leading to the inference that mechanical irritation of the surface of the bladder had been the chief cause. In two cases, where the urine was albuminous in pregnant women, there was an interesting contrast; this condition came on in one of them probably only a few days prior to her confinement, and was not strongly marked, yet she had slight convulsions; in the other, aged thirty-eight, a primipara, who had for years been suffering from a sacculated condition of the œsophagus and almost total obstruction to swallowing anything solid,—the urine was loaded with free blood corpuscles and waxy casts for upwards of two months before her confinement, and, notwithstanding a very long and severe labour, there was never once a threatening of convulsion; it is true, however, that as soon as the local hyperæmia was discovered a few leeches were applied over the region of the kidneys, and other means used to avert the contingency. In the cases of uterine disease, extensive ulceration of the os, the albuminous flocculence was traced to the presence of free blood discs, much vaginal and uterine epithelium, the result of the accompanying discharges. Two persons who had used turpentine improperly for several days (one for gravel, the other for tapeworm) were affected for upwards of a fortnight with albuminuria, blood having been freely passed and some fibrinous blood casts; and the irritation of the kidney was intense.

A few short cases still further illustrative of the importance of a microscopical examination of the urine, *whenever there is the slightest trace of albumen present or suspected*, may not be an unfitting termination to this paper. One case of malignant disease of the bladder is tabulated. This patient, who had passed considerable quantities of blood from the bladder for several years, had consulted the most distinguished surgeons of London and Dublin—was sounded by two of the most eminent practitioners in the former place, and although no stone could be detected, so strong were the evidences of that malady that the sufferings were declared to arise from calculus; others believed it to be the irritation of gout; the

kidney, too, was suspected, as the urine was always albuminous; yet no one thought of applying the microscope. Soon after being consulted by this patient at the recommendation of his medical attendant, it occurred to me, on seeing the nasty strawberry-and-cream-looking, slimy deposit, after the urine had stood for a short time, to subject this to the microscopic examination; on which—strengthened by several successive results, there being no trace of kidney tubular casts, but abundance of free blood corpuscles, numerous caudate and filamentous multinucleated cells characteristic of encephaloid cancer—the case was pronounced to be one of malignant disease of the bladder, an opinion fully confirmed on the death of the sufferer eighteen months afterwards, when both bladder and kidneys were found to be affected with encephaloid disease. Mr. Coulson, in his compendious work on the Bladder, says of such cases: "In general we are never certain of the nature of the disease until the parts are examined after death." After such a case, we may hope the microscope will enable the diagnosis to be more certain.

In another case, where the patient, upwards of sixty, was attacked with frequent severe hæmaturia, attended with much irritation of the bladder, and became despondent, being under the impression that as his father and two brothers had died of the same symptoms, with presumed malignant disease, at about the same time of life, his was likewise to terminate in the same way, several of the symptoms led to that conclusion, until, on carefully examining the character of the urine under the microscope, no trace of diseased structure was discovered; only abundance of free blood, vesical-epithelial scales, and numerous large crystals of triple phosphate. The case was declared to be one, probably of simple irritation; treated with acid tonics, gallic acid, and buku; and gradually recovered.

It is to be feared in too many cases that, the symptoms pointing almost conclusively to a particular disease, as long as they do not indicate kidney affection, every secretion except the urine is noted. How common it is in fevers, exanthems, and inflammatory diseases, to administer diuretics, without a thought as to the condition of the kidneys; nay, the very fact of the urine being scanty, which should put us on our guard, is made the pretext for acting upon organs already perhaps overtaxed and unfit for work. It is not unreasonable to suppose that many a case of Bright's disease, or other chronic form of nephritis, has had its origin in the mistaken attempt to relieve the system by diuretics, when the kidneys were previously overwrought in eliminating from the blood what the lungs or the skin were incapable of effecting. The microscope and test-tube will, if properly applied, often save from such errors; and not only so, but will direct us to the right use of those means by which the kidneys can be brought safely to play their part in restoring the lost balance of health.—*Lancet, July* 4, 1857, *p.* 7.

45.—*Belladonna in Incontinence of Urine.* By G. B. Maspen, Esq.—[The patient had, at various times, been under treatment for this disease, with little or no benefit, except from such preventive measures as abstinence from drink in the after part of the day.]

I prescribed an anodyne alkaline mixture, with an occasional drastic aperient, till having seen Mr. Brooke's case in the 'British Medical Journal' of Feb. 21st, I ordered, on Feb. 28th, one-twelfth of a grain of extract of belladonna to be taken three times a day, when a marked improvement immediately commenced, which continued till after having the medicine for twelve days there was no more appearance of the symptoms. He continued under the same treatment till March 21st, when I discharged him apparently cured. I shall keep this case under notice, and, should any relapse occur, shall not fail to place it on record.

While on this subject, I may mention that I wrote to a some-time patient of mine, who had consulted several eminent practitioners in various parts of the kingdom, and who seldom passed a night without wetting his bed, from birth to the age of sixteen, to suggest this remedy to him. He replied as follows:—"The weakness with which I was afflicted so long has at last left me entirely . . . . . Very likely the sea bathing at Boulogne did a great deal towards a cure, as I was not subject to it after I took a bath three times a week at six in the morning."—*British Medical Journal, April* 18, 1857, *p.* 315.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS, &c.

46.—ON AMPUTATIONS.

By Dr. JOHN SLOANE, House Surgeon to the Leicester Infirmary.

[The common methods of operating in many amputations are faulty. Probably many of them have come into general use recommended only by the charm of novelty, and become fashionable on no other foundation than the recommendation of some distinguished professional brother, who, with his mind perhaps imbued with some preconceived notion, may not have rightly interpreted the phenomena he observed.]

What are the comparative merits of the circular and flap methods of amputating? I shall allow Mr. Erichsen (whose work on 'Surgery' is the most recent) to answer. He says: "Educated in the doctrines of Mr. Liston, who invariably amputated by the flap method, and who certainly did this with wonderful precision and rapidity, I have been in the habit of performing this operation in preference to the circular, over which it certainly possesses the special advantages of greater celerity in performance, more perfect coaptation and smoothness of the opposite sides of the wound, and greater tendency to union by the first intention." That an amputation by flaps may be more quickly performed than by the circular plan, is true; and this was a great recommendation in its favour before the introduction of anæsthetics, but it now has lost its force, as two or three minutes more or less under the influence of chloroform matter little.

Picture in your imaginations a healthy patient whose thigh is being amputated by flaps, for an accident sustained a few hours previously. The following is the course usually adopted. The surgeon, with a laudable anxiety to have the end of the bone well covered, makes the flaps of a good size; he finds that the skin and subcutaneous areolar tissue retract much more than the muscles; but, by exercising a little force, he succeeds in bringing the edges together with several points of interrupted suture. As masses of muscle are bulging through the intervening spaces, long strips of adhesive plaster are applied to complete the closure of the wound; and round the ends of these are applied two or three additional strips, to prevent them from slipping. There is now considerable tension in the stump; but, in a day or two, the swelling consequent on such an extensive wound has caused the tension to increase to an injurious degree, and the very results which we should expect usually occur. Inflammatory action runs high, causing much pain, and requiring the exhibition of opiates. Union by the first intention rarely occurs. Frequently, about the third day, the surgeon perceives a roseate blush in the lower part of the stump; poultices or hot fomentations are applied; the plasters and sutures are removed. Probably, in a few days more, pus has formed at various points in the limb, to which exit is given by incisions; and more or less sloughing of the edges of the wound has occurred. When the inflammation has been subdued, the flaps are again drawn together by plaster, and they unite by granulation. A large proportion of patients, however, do not successfully pass through this ordeal. Do not misunderstand me. I do not say that all these mishaps occur in every case of flap amputation, but in most we have one or more of them.

"Relieve tension," is a good surgical rule which we act upon with beneficial results; as, for example, in diffuse areolar inflammation of the hand, where we prevent much mischief by early and free incisions; and, in the treatment of stumps,

which I have described, effectual measures are taken to relieve the tension, which, it is my firm conviction, would never have existed had a more scientific method of operating, and a more rational mode of dressing the wound afterwards, been adopted.

The plans of amputation which appear to me to be most rational are the circular, or a modification of the flap. In the circular, the skin and subcutaneous tissues, being divided by one sweep of the knife, should be separated from the fascia to the extent of an inch or an inch and a half, according to the thickness of muscle. Then the muscles should be cut in an oblique direction upwards, so as to leave a sufficient covering for the end of the bone. The edges of the wound should be drawn together by interrupted sutures, and, in the intervals, short strips of adhesive plaster, allowing abundant space for serous or other discharges to escape. The advantages of this method of operating are, that allowance is made for the greater retraction of the cutaneous than of the muscular tissues. There is not a mass of muscle which is useless, as it is afterwards almost completely absorbed, and injurious, as it causes tension; and, to use the language wrongly applied, in my humble opinion, by Mr. Erichsen to the flap amputation, the circular plan possesses the comparative advantages of more perfect coaptation and smoothness of the opposite sides of the wound, and of greater tendency to union by the first intention.

If there be no great tendency to separation of the edges of the wound (and there never should be if the operation were rightly performed), I cannot see the necessity of long strips of plaster, which cause tension; surely, short strips will suffice to keep the edges together. It is important to leave spaces between the plasters for the exit of any discharge. In a hospital to which I was once attached, one of the surgeons (a highly educated and estimable gentleman), anxious to procure union by the first intention, was in the habit of completely covering the end of the bone with strips of isinglass plaster; and, in his cases, sloughing and other untoward results were decidedly more frequent than in those of his colleagues who left some uncovered spaces.

The sutures should be removed on the third day, at the latest. In a patient from whose jaw Mr. Benfield lately removed an epulis, he extracted the pins from the twisted sutures in the wound in the cheek, at the end of forty-eight hours; and, when one was extracted, a little pus followed. There was union by the first intention in every part of the wound. Had this pin, which did not appear to be exciting mischief, been allowed to remain, what would have been the result? That the inflammation which was present, as shown by the formation of pus, would, in all probability, have caused the edges of the wound at that point to have separated. This case shows how soon sutures may begin to act as foreign bodies to excite inflammation, "with which union by the first intention is incompatible;" and union having already taken place, if inflammation did occur, the new structure would, as you know, readily break down. I have had opportunities of comparing the practice of two surgeons attached to the same hospital on this point. One almost always extracted the suture-pins on the third day; and, in his cases, there was almost invariable union by adhesion, the exceptions generally being where there was some delay, and the pins were allowed to remain a day or two longer; but, in one or two of these cases, union was perfect, notwithstanding the delay. The other allowed the sutures to remain undisturbed for five or six days, unless some redness or other sign of inflammation supervened; and union by the first intention was the exception in his patients.

The modification of the flap operation which I should recommend is the following. By cutting from without inwards, make the semi-circular incisions of the usual shape through the integuments down to the fascia: these superficial flaps should be separated from the subjacent muscles to a sufficient extent; and then the muscles may be divided by two incisions, so as to form flaps. The methods of operating which I have proposed would be more painful and more tedious than the ordinary plan; and these would have been great objections before the introduction of anæsthetics, when it was considered very important that a surgeon should be a quick operator.

There is another point in the treatment of stumps, after amputation in the thigh especially, which does not always receive the attention it deserves, and the impor-

tance of which was first impressed upon my mind by Mr. Paget. This is the advisability of carefully bandaging the stump from above downwards, the soft texture being at the same time drawn by an assistant over the end of the bone. This practice tends much to prevent protrusion of the bone by curbing undue retraction of the soft parts.—*British Medical Journal*, *May* 2, 1857, *p.* 363.

47.—ON SOME DISEASES OF BONE.

By Dr. Samuel Wilks, Assistant Physician to Guy's Hospital.

[The question as to the malignancy of a new growth is the most important which can be asked concerning it. Though much disappointment has resulted from the failure of the long-cherished hope that the use of the microscope was an infallible guide as to the malignancy or not of a growth; yet this failure, so far from casting discredit on the use of the instrument, is really a bright feature in favour of its utility and importance.]

The microscope has proved that cancer and malignant disease are not universally interchangeable terms, and all praise rather than all blame is due to the instrument for the discovery; and this is the right lesson to learn from the fact; not that the instrument in failing to prove the connection is a sign of its imperfection, but that the use of the terms cancer and malignant disease as identical was a pure assumption on our part. Without considering the question whether the elements of cancer are peculiar or characteristic, it may be stated with some degree of confidence that the microscope is able to recognise its presence in an equal number of cases as can the naked eye, and probably oftener; but at the same time it is able to show that various growths which exhibit the utmost degree of malignancy are not cancerous, consisting, however, like the cell of the cancer, of the simplest structures, as fibre, bone, or cartilage. The microscope, too, on the other hand, may sometimes discover in a local growth the elements which exactly correspond to cancer, and are undoubtedly such, but, at the same time, little credit is placed on the decision, should the disease remain for years, and show no greater evidence of malignancy. The fact, then, is clear, that the whole question has hitherto been based on imperfect knowledge and numerous theoretical assumptions; and we cannot but think that the microscope has done immensely in improving the one and overthrowing the other, and consequently deserves much credit for the result, though of course to those who believed they held the whole truth of the matter the instrument has proved a failure, since it has failed to confirm their chronic convictions. The microscope has, we believe, ever since its general employment, tended to show that there is no more distinct line to be drawn between cancerous and non-cancerous growths than between malignant and non-malignant disease, and that there are links between the most extreme kinds of innocent and destructive growths, as between all other objects in created nature. Ordinary experience is now confirming this statement, and asking why a surgeon should call a cancerous tumour of the breast malignant, when the subject of it is in good health, and has possessed it, perhaps, for a score of years; or why tumours composed of simple fibre, cartilage, or bone, should be called otherwise than malignant when they rapidly propagate themselves through the body and destroy the life of the patient. If malignant disease be that which kills its victim by the multiplication of abnormal growths in various parts of the body, then are such as are just mentioned malignant; or if a cancerous tumour be one which ought to follow the same course, but remains stationary and local for years without detriment to the patient, then of necessity very many tumours which to the naked eye or to the microscope are undoubtedly cancerous, are not malignant.

The subject of cancer and malignant disease is so important, that our ignorance of it is the cause of an immensity of error in our present pathology, but as facts grow we trust that some master hand may grapple with the whole, and reduce them to some intelligible form. At present we believe we want more facts than theories—that is, complete facts. Hitherto we have been content with partial ones, and those who know our London Museums best are aware that, until late years, they have been little better than show-rooms, there being no history to

explain the meaning of the bare fact in the bottle before us, and that a small number of specimens, could they but tell their tale, would throw a flood of light upon pathology. A perfect case, indeed, is of more value than a hundred imperfect ones.

Without prejudging the powers of the microscope, and denying that there is anything characteristic in the cell constituting cancer, the scale of epithelioma, the fibre of recurrent or multiple fibroid tumour, the bone of malignant osseous tumour, or the cartilage which sometimes pervades the organs to their destruction, we believe at present that the microscope has failed in determining any characteristic elements in these various growths. It may be true that under the particular circumstances respecting a growth in a part, with a good experience of the probabilities of only certain morbid structures invading it, a very perfect conclusion may be arrived at, or a very positive denial given to the apparent cancerous nature of a tumour when no foreign elements are found in it, but at the same time, we believe that all observations are tending to show that a cancer-cell in itself presents nothing remarkable, and that fast-growing cells, such as are seen in the gelatinous lymph about diseased joints, are not to be distinguished from it. Still, should there be any peculiarity, it is probably in reference to degree of size, as the large nucleus, rather than to any difference in kind, and the same may be said of epithelial cancer, that it owes its malignancy to the morbid excess in the evolution of scales from the surface, and that the microscope discovers no particular cell or scale which is characteristic; and this we think is borne out by experience in practice, that a simple warty tumour may become malignant, or that a papilloma and an epithelioma are not absolutely distinct. The recurrent or malignant fibroid is said to be distinguishable by some microscopists, and no doubt the fact of the abundant cell-growth and its general cancerous appearance to the naked eye, render it peculiar and different from a simple fibrous tumour; but at the same time, we are not aware that any individual nucleated fibre composing it possesses a characteristic size or shape. Should, however, the microscope at some future time detect a marked difference in a cell, a scale, or a fibre, which should denote its malignant character, we doubt if such will be done in the malignant cartilage or bone; for in all probability these substances are the result of a subsequent formation in a tumour which would have been fibrous, but from the mere accident of the growth being developed in the neighbourhood of bone, or in some organ where enchondroma is wont spontaneously to arise.

If the elements constituting these malignant diseases be not characteristic, the malignity is due to the fact of their simple production, from some anterior cause in the system, which may still be called a malignant diathesis; and this, as far as we at present see, appears to consist in a tendency to the production of some elementary tissues in the full grown body where they should not exist. Thus, the blastema which should form the healthy supply for the nutrition of the various parts of the body produces, instead, a number of elementary cells or nuclei, and these constitute simple or malignant growths according to their degree of development and rate of production. Such a mass of cells grows and destroys the patient, by exhausting the powers or by interfering with some organ with which it is in contact. That a malignant form of disease which produces a tumour composed of cell-growths, should be more common, and the tumour grow faster than one composed of fibre, is reasonable from its simpler nature; and, therefore, that such *par excellence* should be called malignant, is not remarkable; nor that if the seeds of it should be carried to any other part, that they would there also rapidly increase. If, again, from some cause, whether that be in the diathesis or in the part first excited to action, the new growth should be of a fibrous character, we see with some degree of reason why it should be of slower formation than the true cancer, and why also from the fact of its approaching so nearly in structure those simple inflammatory ones which are called benignant, why this diathesis should present various degrees of malignancy in its result; and so a growth which in one instance is multiplied throughout the body, in another instance merely returns to the spot where it is extirpated. As it is extremely possible that in these two cases the malignancy is only a question of degree, there may also be only another degree between a recurrent fibroid tumour and one which never returns after removal. Again, it does not seem remarkable that a growth

on the surface of the body consisting of a mass of epithelial cells, evolved from an epithelial surface, should be generally confined to that part or remain local; for though a cell may grow and propagate in any part, or even a fibrous structure do the same, yet an epithelial cell takes root with greater difficulty; and thus, if propagated, it is only by contact, and to the neighbouring organs, or even if seen in the viscera, as the lungs, or liver, the cells are abortive, or have only imperfect resemblance to epithelium. Malignant, osseous, or cartilaginous tumours, we believe, depend, as before said, on the same cause which gives rise to cancerous or fibrous tumour, but possess their character from being produced in the neighbourhood of bone, and retain the same if repeated throughout the system; and although this origin is not always true of cartilage, yet even this has its beginning where enchondroma is wont to arise.

This method of regarding cancer must necessarily alter many of our older opinions respecting the disease. It has generally been regarded as a specific morbid element which, having once entered the body, dooms its victim to inevitable destruction, and this often by its mere presence in the system, and without any very great impairment to the organs. This view, however, is seen by experience to be erroneous, although the fact still remains true that the disease is as fatal as ever, and depends upon some latent idiosyncrasy. Although we may very well believe that there exists a cancerous diathesis, yet that that may destroy the subject in which it is present, without any local manifestation of its presence, is without proof. There has been a kind of loose belief in this opinion, and that cancer is something foreign to the body as much as a poison; and having seized upon its victim, may possibly destroy it before any vital organ is injured by it. So much, indeed, has this been the belief, that if a patient has had a tumour, and its nature uncertain, the aspect or wasted appearance was sufficient to decide its cancerous nature, or if another patient should seem to be wasted without any tangible cause, a latent cancer was suspected. All our individual facts, of which we have great abundance, tend to disprove this, and show that cancer kills either by the drain on the constitution, or by its encroachment on some important organ, most frequently the latter, and the symptoms have reference to imperfection of function of that organ, rather than the presence of the cancer. Thus patients with cancer of the stomach, or of the parts in its neighbourhood, by which constant vomiting is set up, are subject to an extreme wasting; but such would be equally the case if such organs were affected by tubercle or simple inflammatory affection, which interferes with the chylopoietic function and the general nutrition of the body. This is proved by the marasmus of children, and the not uncommon cases in adults, where a simple inflammatory process, by involving important organs, has produced the most wretched emaciation, although diagnosis of cancer was unquestioned; and, indeed, in the so-called scirrhous pylorus, in its simplest form, the emaciation is extreme, and yet the disease in many cases is far from being proved to have a cancerous origin. On the other hand, patients who die with cancer in less vital organs do not necessarily waste, nor if the disease attacks external parts; for in such often a superabundance of fat is found. No surgeon, indeed, looks necessarily for wasting in his cases of cancer of the breast; on the contrary, the subjects of this disease are often seen to be remarkably fat, indeed the *post-mortem* examination of fat patients who have died of cancer is of almost weekly occurrence.

Had space allowed we should have liked to have adduced some more facts which tend to show that many of these forms of new growths are linked to each other, and in many cases do not admit of any line of distinct separation; just as the recurrent fibroid, which, both in its clinical history as well as in its anatomical nature, takes its place between the simple fibrous and the true carcinomatous tumours. In a case, which lately occurred at Guy's, of scirrhous pylorus in a young woman, the disease had been of four years' standing, accompanied with all the usual symptoms; but the *post-mortem* examination showed the adventitious thickening to be due to simple fibrous growth in the sub-mucous tissue, associated with a fibroid hardening of the neighbouring glands. Also another case, where, with a similar condition of stomach, the liver was filled with a number of nodules presenting a carcinomatous appearance, but which was as hard as cartilage; and a microscopic examination presented merely a well-formed reticulated fibre-struc-

ture without any cells. There would have been a question as to the propriety of calling this cancer, had not tumours been found in both breasts, presenting the appearance of scirrhous disease, although even here the microscope showed mainly fibrous structure, associated with a few small oval nuclei. It might, therefore, be doubted whether scirrhous disease of the breast does not present varieties; and that some, like the present, consist of little more than an atrophied organ with a small development of fibro-cellular tissue.—*Guy's Hospital Reports, Vol. III.*, 1857, *p.* 144.

48.—ON RESECTION OF LARGE JOINTS.

By one of the writers of the British and Foreign Medico-Chirurgical Review.

The Shoulder-joint.—Resections of the shoulder, unlike those of the knee, generally necessitate the removal of but one of the articular extremities entering into the joint; it is very seldom that more than the head of the humerus need be removed, either from disease or injury, and this from the very nature of the affections of the joint, which, while they seriously damage or even destroy the head of the humerus, rarely attack the glenoid cavity of the scapula. Again, the exposed position of the humerus, which renders this bone so peculiarly liable to injury from gun-shot wounds, forms a protection for the scapula. Fortunately the full benefit of resection may be secured by the removal of one articular extremity, as it is not our object to obtain bony ankylosis.

This operation is applicable to compound dislocations, to cases where a bullet may have lodged in the head of the bone, and to all wounds of the shoulder-joint complicated with crushing or fracture of one or both bones entering into the articulation, unless, of course, the severity of the injury, by division of the great vessels, or by extensive laceration of the soft parts, necessitates ex-articulation of the limb. Nor need the extension of the injury to the shaft of the humerus deter the surgeon from attempting the operation. During the Schleswig-Holstein war, in more than one case, as much as four or five inches in length were removed from the shaft of the bone, and that with the most complete success.

In disease, either one or both articular extremities of the joint may be removed for caries, or indeed for any other incurable affection of the articulation, which renders it not merely useless as a joint, but by its presence either destroys the utility of the whole extremity, or seriously affects the general health of the patient. Lastly, this operation may be substituted for ex-articulation, in cases where tumours affecting the head of the humerus do not by their extension to the shaft necessitate the removal of the entire limb. We apprehend that resection of the joint is by no means justifiable for mere ankylosis, provided that this is the only inconvenience the patient suffers from. The movements of the fore-arm and the rotation of the scapula compensate so considerably for this, that we cannot see the necessity for the operation. The operation is counter-indicated where, together with compound fracture, there is any excessive destruction of the soft parts, or injury to the great vessels or nerves. Neither should cases of necrosis or caries be submitted to operation, unless the disease be confined to the articular extremity of the bone, or at any rate be within reach of removal.

The objects of this operation are to restore to the patient a strong, painless, and, if possible, a movable articulation; and these results are best secured by a careful selection of suitable cases, a well-planned operation, and appropriate after treatment.

The object of any mode of operation must be the sufficient exposure of the joint, with the least possible injury to the parts about. It appears, from the history of former operations on this articulation, that though Park, White, and others had adopted a single longitudinal incision for the removal of the head of the humerus, yet previous to its performance by Professer Langenbeck, the long tendon of the biceps had always been divided. He it was who first practised an operation which had for its object the preservation of this tendon. Langenbeck's method consists in an incision commencing at the acromion, and extending downwards on the anterior aspect of the joint for three or four inches; this should fall just over the bicipital groove, which is then opened, and the tendon drawn inwards; the

muscles inserted into the tuberosities are now divided, and the head of the bone thrust out of the wound and removed by an ordinary saw. This operation is sufficiently easy of execution when the head of the bone retains its connexion with the shaft, and the soft parts are not tense or swollen. On the other hand, it is difficult by this incision to remove the disconnected head of the humerus, and especially when the integuments are swollen and œdematous. To remedy this, and to provide a more dependent aperture for the escape of the secretions from the wound, Stromeyer made use of a semicircular incision, commencing at the posterior edge of the acromion, and extending downwards and outwards for three inches, having its concavity forwards; the joint is thus freely opened from above and behind, the tendon of the biceps can be preserved, and a free and dependent aperture is left for pus. Stromeyer states that patients recover from this operation much more quickly than from Langenbeck's, owing to the much greater facility it affords for cleansing the wound. That perfect recovery may take place after division of the tendon of the biceps is well known, and indeed Esmarch relates three cases of resection in which it had been torn across by a ball, and yet in each case the patients recovered, with good use of their arms. It may also be gathered from similar evidence that transverse division of the fibres of the deltoid but little affect the ultimate success of the case. Whatever mode of incision be adopted, the deltoid, with few exceptions, becomes much atrophied after the operation; perhaps this is caused by the division of its nerve, which, with the posterior circumflex artery, are the only nerve and vessel of importance that are liable to injury.

The after-treatment of these cases is far more simple and more easy of execution than that of excision of some other joints. Absolute rest, cleanliness, and appropriate constitutional support constitute the principal measures to be adopted; but we will refer to the plan pursued during the Schleswig-Holstein war. Absolute quiet was maintained by bandaging the arm to the side. Ice was freely applied to the parts, and maintained there until suppuration was fully established. Bleeding, both constitutionally and locally, was unsparingly employed during the stage of reaction, and upon this Stromeyer strongly insists. The wound was never, if possible, disturbed, all cleansing was effected by allowing water to flow over the wound. Matter, if it formed, was let out by incisions, and not squeezed out. Cicatrization was promoted by dressings of nitrate of silver lotions; flannel bandaging was employed to consolidate the parts; passive motion was commenced as soon as the cicatrix had formed, and was continued at the discretion of the surgeon, and as the patient could bear it, until considerable voluntary motion of the extremity had been regained.

The Elbow-Joint.—Among the larger articulations, there is none to which the operation of resection is so admirably adapted as to the elbow. Compared with other joints, our more extended experience of the safety of *this* operation, its general freedom from a protracted convalescence, and the brilliancy of its results, justify our performing it on the elbow, as a cure for disease, or as a substitute for amputation in cases of injury, with but little apprehension of danger to the patient's life, or little doubt of obtaining a successful issue. "In short," says Mr. Butcher, "those trembling and sceptical about the propriety of the more severe excisions of the hip, knee, and wrist-joints, yield their allegiance and assent tacitly in favour of excision of the elbow, and allow unsullied its accredited merits."

The elbow-joint, in cases of injury, may be resected in part or entirely, for gunshot or other compound fractures affecting it, where the injury to the bone is too extensive to permit of extraction of the fragments, and where no extensive destruction of the soft parts or lesion of the great vessels necessitates amputation.

It is also applicable to those cases where bullets have lodged in either of the articular extremities entering into the joint, and no less to cases of compound dislocation where the most favourable result of the expective plan of treatment will but restore a stiff joint to the patient. It is in the elbow-joint alone that we are justified in applying resection as a cure for simple ankylosis; and here any such condition of the joint, either the result of injury or disease, which so impairs the usefulness of the upper extremity as to prevent the sufferer from gaining his livelihood, is without doubt a case to which excision is applicable, provided that the patient is desirous of submitting himself to the operation.

In cases of disease, excision of the elbow may be practised with great success for caries or necrosis of any of the joint ends of the articulation, and indeed for any affection of the synovial membrane or articular cartilages which renders the joint useless and is beyond our curative aid. Carious disease or necrosis of any considerable portion of the shafts of the bones of the fore arm and humerus, or fractures which extend for more than four inches either above or below the articulation, all alike forbid resection of the joint.

By performing the operation in these cases, or in any other to which it is inapplicable, either the wretched sufferer may be doomed to mutilation for life, or resection, a most valuable operation, may be brought into discredit by its performance where not at all suited, and where it was never intended by its warmest supporters."

"Again, it should be remembered that a patient may not have the power to bear an amputation after failure by an ill-advised resection, when he might have made a good recovery from amputation if performed at first."

The condition of the integuments in long-continued disease of the joint—we mean their swollen, sodden, and inflamed state—need form no obstacle to the performance of this operation; this quickly subsides on removing the real cause of the disease.

The object of this operation, in the case of the elbow-joint, is to restore, if possible, a thoroughly movable articulation, such an one as is fitted for all the ordinary avocations of life; but if mobility is unattainable, a firm ankylosis at a suitable angle is the most desirable result. As in resecting the shoulder-joint, it is not necessary to remove all the joint-ends entering into the articulation, though one would have supposed that recovery would be expedited by the removal of the opposed cartilaginous surfaces. Stromeyer gives it as his opinion, and that the result of experience, that it is of no advantage purposely to destroy the articular cartilage.

The rule of practice, in this respect, in the Schleswig-Holstein war, appears to have been either to resect the articular extremities of both radius and ulna, or only the end of the humerus; of course, where the severity of the injury required it, all the joint-ends were removed. In no case was it thought expedient to leave the opposed ends of the bones in contact after the operation; this latter proceeding results, as one might expect, in bony ankylosis. Stromeyer maintains, in opposition to Esmarch, to whose opinion we have just alluded, that the presence or absence of ankylosis is chiefly dependent upon the plan of after-treatment adopted by the surgeon; and, indeed, from the perusal of Esmarch's table of forty cases of resection of the elbow-joint, it appears that the amount of bone removed but little affects the ultimate mobility or stiffness of the arm. In one case related, four inches of the end of the humerus were removed, and still no movement of the joint was ultimately obtained, and yet another case is given where all the joint-ends were resected with the same result; again, from a third patient, four inches and a-half were removed from the end of the humerus with a directly opposite result, great mobility being eventually obtained. In fact, so anomalous are the results in this respect, of removal of more or less extent of bone from the articulation, that we are inclined to believe with Stromeyer, that judicious after-treatment chiefly contributes to the restoration of a movable joint. Esmarch strongly condemns partial resection, or the removal of broken fragments of bone from the articulation, and in proof of this opinion he quotes two cases of Stromeyer's where this plan of treatment is adopted: in one, the external condyle alone was removed, in the other, only the olecranon; both cases were followed by secondary abscesses in the neighbourhood of the joint, and after a tedious convalescence of four and seven months respectively, both patients recovered with bony ankylosis. In oblique compound fractures of the bones of the elbow-joint, it was found sufficient to truncate the projecting angle of bone, and not necessary to cut through the shaft so as to include the whole of the fractured surface; in this way many cases were successfully submitted to operation which otherwise would have involved too great a loss of bone to allow of subsequent repair.

In all the various plans of operation for resection on the elbow, the main object to be attained is the sufficient exposure of the bones without injury to the ulnar nerve, or undue division of the soft parts around the joint; the ulnar nerve is to

this joint what the tendon of the biceps is to the shoulder in the operation for resection; though the preservation of the nerve is of much greater importance, yet neither nerve nor tendon should in either case be divided.

For performing the operation under consideration, various plans of incising the integuments have been adopted; those most in use at the present day are the H-shaped incision, used by Mr. Syme; Liston's mode of operating, and Langenbeck's. In the H-shaped incision, the longitudinal cuts run at the back of either condyle, and are connected by a transverse division of the integuments just above the olecranon. Langenbeck's operation consists in a single longitudinal incision running down the inner side of the posterior part of the joint, just to the radial side of the ulnar nerve; the joint is opened, and the soft parts and ulnar nerve are dissected *en masse* from the subjacent bone; the coverings of the joint on the outer side are in the same way separated, the lateral ligaments divided, and the ends of the bone thrust out by flexion. Of these two modes of operating, the former, without doubt, fulfils the great object of the undertaking—viz., the free exposure of the joint-ends; but it does this in an unnecessary degree, or rather, sufficient exposure may be attained by less extensive division of the soft parts. Langenbeck's method of operation, on the dead body or on an arm where the integuments are in a healthy condition, will with little difficulty quite sufficiently expose the joints; but in an arm where the integuments are tense and swollen, it does not accomplish this to the requisite extent. We have ourselves seen, in an operation for disease where the soft parts were in their usual state of tension and succulence, the outer flap tear transversely, owing to the great strain upon it in drawing it aside to bring the joint fairly into view. In our opinion of Langenbeck's operation, we are supported by Esmarch, who says of this proceeding:

"As soon, however, as considerable serous or inflammatory infiltration has come on, as generally occurs after gun-shot injuries, it is necessary to lengthen this incision too much, to prevent tearing and bruising the skin."

And for this reason it was that, in the Schleswig-Holstein campaigns, Liston's operation was generally adopted. Out of forty cases, Langenbeck's operation was put in practice three times, while Liston's was employed in twenty-seven cases. This latter operation consists, as is generally known, in a ⊣ shaped incision. The longitudinal cut is commenced above the olecranon, between it and the ulnar nerve, and is continued downwards for three inches or more, along the ridge on the back of the ulna; a transverse incision is now made across the radio-humeral articulation, which joins the first at its centre; by this the joint is opened, a hook or a finger is placed within the joint, and used to retract the soft parts with the ulnar nerve to the inner side; this is facilitated by separating them with the knife from the surface of the bone, taking care to carry with them as much periosteum as it is possible to procure; the lateral ligaments are divided, and the heads of the bones turned out by flexion. In this operation the ulnar nerve runs but little risk of being divided, as, in separating it from the bone, there is the capsule of the joint, the lateral ligament, and its own sheath to defend it from injury,—in fact, the nerve should not be seen during the whole operation. In gun-shot fractures, however, the existence of bullet wounds often necessitates the deviation from any rules of operating, and obliges the surgeon to make a skilful use of existing apertures by including them in the line of his incisions.

In this operation, although the preservation of the ulnar nerve may appear to be easily attained, provided ordinary care be exercised, yet we have recognised its division by the subsequent loss of sensation, when at the time of the operation it was apparently uninjured, and indeed was not seen throughout; that union may take place and sensation be restored, even after its division, is well exemplified in a case related by Mr. Syme, where, although it was divided at the time of the operation, the patient subsequently regained sensation and voluntary motion in the parts supplied by it. If possible, in removing the ends of the bones the insertions of the brachialis anticus and biceps should be preserved, as their integrity adds much to the strength of the future articulation; still, the removal of the coronoid process and the tubercle of the radius has often been effected with the ultimate restoration of a useful joint.

The Wrist.—We pass from the consideration of resection of the elbow-joint, to the less favourable and indeed almost discouraging results of the same operation

on the wrist. In all operations for excision, a general and indispensable condition must be fulfilled—namely, that together with the partial or complete removal of the articular extremities of the bones, there should be a free exposure or destruction of the synovial cavity of the joint; any operative proceeding which leaves the articulation in a condition approaching to that of a wounded joint will lead to no good result, but will rather thenceforth be exposed to the dangers attendant on joint wounds, and will terminate as such accidents are wont to do.

In excisions of the wrist, owing to the complexity of the joint, it is seldom that we can fulfil these conditions; in removing disease here, while we take away the carious bone, or destroy the useless joint, in all probability we partially open or puncture one of the neighbouring articulations, which may be healthy or otherwise, and thus we leave a wound from which the subsequent phenomena of inflammation, profuse suppuration, and ulceration of the cartilages, will but too surely result. There are other, but minor, objections to this operation, such as the difficulty of the performance, and the injury to the tendons which is often unavoidable, though these form no serious objection to the operation. Moreau the younger seems to have been the first to perform this operation on the wrist; the result he reports as successful, but we have been unable to meet with any distinct history of the case. In 1849, Heyfelder operated on the same articulation with equal success; five years afterwards this patient had regained perfect use in the hand and fore-arm, a result but rarely attained in similar cases; more recently the operation has been performed by Messrs. Fergusson, Stanley, Erichsen, and others.

In operations on the dead subject, it is sufficiently easy to remove the extremities of the radius and ulna without injury to the tendons or vessels in the neighbourhood, and indeed this has been accomplished by more than one surgeon on the living body; but very often, in disease, it is impossible, and indeed useless, to attempt to save the extensor tendons, matted together as they may be by inflammatory deposits, and closely adherent to the bone. The principal modes of performing this operation are three:—1st, by lateral longitudinal incisions running along the ends of the radius and ulna respectively; 2nd, by a semilunar or conveniently shaped flap, formed from the back of the wrist; and 3rd, by making two long incisions, the one in the palm, and the other on the posterior aspect of the joint. This latter operation has been performed by Mr. Simon, but we should imagine that the great length of the incision would form a serious objection to this method. By the first and last modes of operation, the tendons may without difficulty be saved; whereas by forming a flap on the dorsum of the hand, though a good view of the joint may thus be obtained, yet some of the extensor tendons will necessarily be divided. Mr. Butcher maintains, with great justice, the importance of avoiding, if possible, any interference with the carpal articulation of the thumb, or its extensor tendon. This he effects by commencing his incision just to the ulnar side of the tendon of the extensor secundi internodii, cutting a semilunar flap from the back of the wrist, and ending his incision on the ulnar half an inch higher up the fore-arm than the point where it commenced; thus the extensor tendons of the fingers only are divided, while those of the thumb are turned aside; this operation has also the advantage of being easy of execution in nearly all cases.

Resection as applied to the wrist is justifiable in young patients, as a substitute for amputation in caries, or in cases of general destructive synovial disease; it has also been performed with success for osteoid disease of the carpal end of the radius. Probably the cases to which it is most applicable are those of compound dislocation of one or both bones of the fore-arm, where the protruded portions of bone may be sawn off with a good prospect of success.

The Hip-joint.—This bold and hazardous operation was first recommended by Mr. Charles White, of Manchester, in 1769, whose suggestion was put into practice by Mr. A. White, of the Westminster Hospital. He, in 1818, excised the head of the femur for carious disease, with a more fortunate result than has since attended many operations on the same articulation. Subsequently, in 1844, Mr. Fergusson excised the head of the bone for caries with equal success, after having, as he says, meditated for more than ten years the performance of this operation, without meeting with a single case in which its execution could be deemed justifiable.

Excision of the head of the femur is, without doubt, best adapted for those cases

of disease of the femur where the carious head of the bone, having suffered spontaneous dislocation, lies as a foreign body on the ilium, and by the irritation it causes, endangers the life of the patient. Such cases resolve themselves into ordinary operations for necrosis or caries, and can scarcely with justice be called excisions of the hip-joint.

Less hopeful are the results of this operation, when undertaken for disease of the head of a bone which lies yet in the acetabulum, and still less encouraging are the cases where it is performed for general caries of the articulation—i.e., where both pelvis and femur participate in the disease. In no case is it justifiable unless the life of the patient is in danger from the excessive discharge or from the irritation of the carious head of the bone.

It should be undertaken in no case as an operation of expediency, but only when absolutely necessitated by the constitutional condition of the patient, and by the incurability of the local disease. In the most favourable cases, when the patients are young and otherwise healthy, the bone dislocated, and the pelvis free from disease, we may hope not only to save the patient's life, but to restore to him a useful and movable limb. Still in many cases, and especially in those of gun-shot fracture, in which it is no less our duty to perform this operation, we can only afford to the patient an uncertain chance of escape from certain death.

It is only applicable to injuries when the head or neck of the femur is broken by a musket ball of moderate dimensions, in such a way as to implicate the joint. Extensive fracture of the pelvis or injury to the great nerves or vessels, of course forbids the performance of the operation.

The head of the thigh-bone may be removed without any considerable difficulty, and it is usually done from the posterior and outer side of the joint. A longitudinal, semilunar, or crucial incision over the great trochanter, will in all cases sufficiently expose the parts without any danger to the great nerves or vessels. The head of the bone can be thrust out of the wound by rotating the knee inwards, when it can easily be removed by forceps or an ordinary saw. Mr. Guthrie advised, that in cases of doubt, where the extent of the disease or injury is unascertained, the incision should be made in such a way that should it be necessary, exarticulation may be performed by extending the first wound. This may easily be attained if the joint is exposed by an incision from the anterior superior spine of the ilium downwards to the great trochanter. We have ourselves seen this plan of operation adopted with good success.

It has been a subject of much discussion in this country as to whether, when both pelvis and femur are diseased, such a case is a fit subject for operation. Hitherto, surgeons have generally agreed that an extensively diseased acetabulum, or a pelvic abscess, if ascertained, was a good and sufficient reason to abstain from resecting the diseased joint, choosing rather to allow things to take their course, than to subject the patient to what was considered in such cases the gratuitous cruelty of the operation. In opposition to these views, Mr. Hancock, in his recent article on this subject, thus expresses himself:—

"In deciding on this operation, we should be guided by the condition of the patient, and not by any arbitrary stages of the disease; and whilst I always have, and still continue to deprecate unnecessary, ill-considered operations, I believe it to be our duty, when we have assured ourselves that a case is one of hip disease, that the patient is dying, and there is no hope of saving him by the ordinary means, to perform, or at all events propose, the operation—without reference to whether, pathologically speaking, the disease be in this or that stage, or whether the head of the bone be dislocated, the acetabulum healthy or not."

In support of this opinion, Mr. Hancock asserts that rarely, if ever, is the acetabulum entirely free from participation in disease with the femur. In nineteen out of the twenty-seven operations performed, the acetabulum afforded more or less evidence of disease at the time of the operation. In two there was scarcely a trace of acetabulum. In three the acetabulum was filled with a fibro-gelatinous mass. In six the gouge was employed for caries. In three it was perforated, and in the others it was more or less affected. After all, it is only in a very few instances that the surgeon can tell beforehand what is the state of the cotyloid cavity; and this uncertainty is of less importance if Mr. Hancock's views on the subject are correct. So far from perforation of the acetabulum being a barrier to

the operation, that gentleman maintains that even under these apparently unpromising circumstances, excision may be performed with safety and benefit. In support of his opinions, Mr. Hancock brings forward his own case, where, from a boy, aged fourteen, suffering from carious disease of the whole joint, with pelvic abscess, he removed the head and neck of the femur, together with the floor of the acetabulum. The operation was followed by almost instant relief of his constitutional symptoms, and at the end of five weeks he could walk with a crutch and a stick. In only two instances recorded was the result of the operation immediately fatal; in most cases, whatever the ultimate effect of the proceeding, the immediate consequences were relief from pain, and a marked improvement in the constitutional symptoms.

It is but seldom that a case presents itself in military surgery to which this operation is applicable; the position of the head of the femur, deeply buried in muscles, surrounded by the acetabulum, and having the great vessels of the limb on its anterior aspect, renders an uncomplicated injury to the head or neck of the bone very rare.

The Knee-joint.—Mr. Butcher, the able and distinguished champion of resection of the knee-joint, by his valuable memoirs on the subject has left little to be desired, either in the collection of cases, or in the analysis of their results. Time only can add to our knowledge on this subject, by testing the permanency of the cure effected by the operation; and additional experience may guide us more correctly in our choice of cases, by teaching us the comparative advantages of the operation in the various affections of the joint.

The operation is only recommended, even by its strongest supporters, as a substitute for amputation in certain cases, and not as an operation of expediency. It may be performed as a substitute for amputation in any disease of the cartilages, synovial capsule, or articular extremities, which either by its severity endangers the life of the patient, or is in its nature incurable. Thus it has been put into practice with success by Dr. Buck, of the New York Hospital, in a case of angular ankylosis of the knee. On the other hand, just as in the case of the other joints, the disease, if of the bones, must be limited to their articular extremities; while of course visceral disease, or extreme age, alike precludes the performance of the operation.

This proceeding has but rarely been put in practice for injuries of the joint; indeed, it is seldom that the knee is exposed to an accident sufficiently severe to justify resection, which is not at the same time so dangerous to life as to necessitate amputation. It may, and has been, performed for gun-shot injuries to the articular extremities of the bones forming the joints, or for wounds of the capsule where the articular surfaces of the bones are bruised or lacerated by the bullet. It has also been put in practice with success in a case where, from an old fracture of the patella, with great separation of the fragments, the leg became useless, and mechanical appliances could not be worn.

The object to be attained by this operation is to free the patient from an incurable and often fatal disease, and to restore to him the power of progression, by giving him a firm and unbending, though shortened, limb, which shall have its axis of motion at the hip-joint. In fact, this operation, if successful, effects all that amputation can do; and in addition, while it endeavours to save the patient's limb, it is said to expose the sufferer to no greater danger of his life than amputation.

The various modes of resecting the knee-joint resolve themselves into two principal methods; first, the H-shaped; and second, the semilunar form of incision.

In the first operation, an incision three or four inches in length is made on either side of the joint, opposite the lateral ligaments, and these are joined by a transverse cut, extending across or below the patella, which bone is either thrown up in the flap, or removed, according to circumstances; forcible flexion is then used, and the lateral ligaments divided; the posterior part of the femur is carefully freed from its ligamentous covering; and with an ordinary saw the articular surface of the bone may be removed, first from the femur, and then from the tibia. The second mode of operating consists in forming a semilunar flap, with its convexity downwards, commencing just above one condyle of the femur, extending

across the joint below the patella, and ending at the opposite condyle; the subsequent steps of these operations are the same in both cases.

There is yet another plan of excising the joint-ends at the knee, which was originated by Mr. Jones of Jersey, and has for its object the preservation of the ligamentum patellæ. It consists in forming two lateral longitudinal incisions, with a transverse connecting cut across the head of the tibia; the flap thus formed, of the integuments only, is thrown up, the synovial capsule cut through, and the patella with its ligament drawn to the inner side while the joint is in an extended condition; forcible flexion should now be used, the lateral ligaments divided, and the articular surfaces sawn off.

This operation, though admirable in its design, must at all times be difficult of execution, and in some cases impossible, though its performance may be much facilitated by the use of Mr. Butcher's ingenious saw. Indeed, Mr. Jones thus speaks of his operation:—"There are cases in which it is altogether inadmissible, and I feel persuaded that whoever adheres to one mode only, will often find himself wofully disappointed in the result."

To secure the general object in view—viz., bony ankylosis—it is in all cases necessary to remove the articular surfaces of both tibia and femur, whether diseased or not. The condition of the patella, as disclosed during the operation, will determine the course to be pursued with respect to this bone; any small and circumscribed spots of caries may advantageously be removed by the gouge, for in all cases healthy surfaces of bone should be left in contact.

In resecting joints, the seat of the particular affection known as "pulpy synovial disease," it is doubtless of great importance (as suggested by Mr. Humphry) to remove, if possible, all portions of the degenerated synovial membrane, as its presence in the wound cannot but prolong the subsequent suppuration and retard the healing processes. After removing the portions of bone from the articular extremities, much difficulty has occasionally been found in bringing the femur and tibia in apposition, and in maintaining the whole limb in a right line; to obviate this, Mr. Hutchinson has suggested the division of the hamstring tendons, a proceeding fully justified by the vital importance of the end in view. Heyfelder recommends, that even if the limb cannot at first be placed in a straight position, it should be put upon a splint, and a day or two afterwards straightened, when the muscles will be found to offer less resistance. In proof of this he quotes a case where, ten days after the operation, the limb could be straightened which had hitherto resisted the efforts made to place it in a proper position. Five days afterwards this patient died of pyæmia. We cannot but disagree with Heyfelder in this plan of practice, deeming it, as we do, of the highest importance that the limb be placed at the time of operation in a proper position, and there maintained until it no longer requires artificial support.

In no other resection is the after-treatment of such importance as in the resection of the knee; on this point Mr. Butcher justly insists, and urges the personal superintendence of the surgeon in all the subsequent dressings and shifting, which should be few and far between.

A well padded McIntyre splint behind and a long Liston's thigh splint outside, are almost indispensable to the well-doing of the case. The former should be applied before the patient leaves the operating-table, and the latter on his removal to bed. After no operation is the judicious administration of stimulants and opiates, together with a skilful management of diet, more necessary than after this; indeed, in reading over any number of cases of recovery from this operation, though a few patients seem to suffer but little from the immediate effects of the operation and subsequent suppuration, yet in the many cases one cannot but be struck with the fact, that where the event was successful, the after-treatment showed a well-contested and hardly-won struggle between the surgeon on the one hand, and the flagging powers of the system on the other.

The Ankle-joint.—Excision of the ankle-joint, originated by Moreau, strongly advocated and successfully practised by Sir Astley Cooper, has in these days, for some insufficient reason, met with but little countenance; and in comparison with the effects of the same operation on the knee, its advantages seem to be by no means adequately appreciated. Resection is applicable to the ankle-joint in its diseases, but still more so in its injuries, and this both on account of its structure

and position. The synovial cavity of the ankle, unlike that of the wrist, may be laid open or destroyed by operation, without implicating the surrounding articulations; there is less danger here of inflicting an injury on the neighbouring joint, and of setting up a disease no less severe than that for which the operation was undertaken. Again, after removal of the articular extremities, the appearance of the wound contrasts most favourably with that left after resection of the knee-joint, where the exposed surfaces of the bone are very extensive, and the cavity of the wound large and deep. In addition to this, the position of the ankle-joint, far as it is from the centre of the circulation; while, on the one hand, it is perhaps unfavourable for the healing process, yet, on the other, it enables us to put excision into practice with but little danger to the patient's life; indeed, we are not acquainted with a single case where the operation was followed by fatal consequences.

The diseases of the joint under consideration present considerable difficulties in the diagnosis of their extent; it not only requires great care to decide whether the disease is entirely limited to the tibio-tarsal articulation, but it is sometimes nearly impossible to distinguish between caries of the astragalus and the same disease of the os calcis. For this reason it is, as well as on account of the great difficulty of exposing the articular extremities when the bones are in their normal position, that the operation is best adapted for injuries of the joint, and especially for compound dislocations. In these the amount of mischief is more easily ascertained, and the protrusion of the bones, rendering their section easy, obviates the greatest difficulty of the operation. Sir Astley Cooper, in speaking of the compound dislocations of this joint, states that he knew of no fatal case where the operation was performed, though he had met with several where it was not put in practice.

Resection may be substituted for amputation in any synovial or carious disease of the ankle-joint which does not extend among the other tarsal articulations, or involve any considerable portion of the shafts of the bones of the leg. It may be performed in rare cases of gun-shot wounds of the joint, with fracture of the bones; but in these accidents there is too often such considerable injury to the soft parts and vessels as to demand amputation.

In performing the operation on this joint, there is said to be no absolute necessity for removing the opposing cartilaginous surfaces: in diseases, the affected surface of bone should be sawn off; in injury, the protruded or fractured portions of bone need only be excised. Many instances have occurred where, after sawing off the protruded ends of the tibia and fibula, the cartilaginous surface of the astragalus has been left untouched, and with the happiest result. In this particular we cannot but notice the much greater proneness to ulceration displayed by the articular cartilages of the long bones entering into the knee-joint, where exposure of the cartilage but too surely leads to its ulceration and separation; still we have no doubt that the safest course, and that which is most likely to promote recovery, is to remove the cartilaginous surfaces of the joint, whether healthy or diseased.

The plans of incision used for excising this joint have been various, having for their object the adequate exposure of its cavity without injury to the tendons; this can be best accomplished by the operation recommended and described by Mr. Guthrie in his Commentaries, to which we refer the reader, as the limits of this paper will not permit us to transcribe it. After the operation, the limb may be best secured on a back splint and foot piece, having movable sides, which can be let down to wash and dress the wound.—*British and Foreign Medico-Chirurgical Review, Oct.* 1857, *p.* 289.

49.—*Swing Apparatus after Excision of the Hip-joint.*—The principle of the swing treatment for fractures, &c., certainly finds its ultra-development in its application to cases of diseased hip-joint. One case at least may, however, be seen at present in King's College Hospital in which it is so employed. Mr. Heath, the House-Surgeon, at whose suggestion, and under whose management it has been employed, informs us that very great benefit has been obtained. The mode adopted is that of Salter's swing, the apparatus being made strongly, and the entire

body suspended. The wound is left uncovered, excepting by the dressings, and thus a depending escape for the discharge is secured. The great advantages are that there is no necessity to disturb the patient in order to allow of the evacuation of the bowels, and the accumulation of discharge in and about the wound is altogether prevented. But little attention is paid to the position of the thigh, provided that it be comfortable to the patient, and that it be not allowed to remain too long in the same, as the object is to secure ligamentous union and a movable limb. We are not aware that the swing has yet been employed in the case of any adult person.—*Medical Times and Gazette, Aug.* 22, 1857, *p.* 195.

50.—ON THE TREATMENT OF FRACTURES OF THE THIGH.

By Dr. J. H. Hobart Burge, Surgeon to the Brooklyn Central Dispensary, New York.

[The apparatus contrived by Dr. Burge for the treatment of these cases, is intended to remove, as far as possible, the disadvantages possessed by the ordinary straight apparatus—namely, the pressure caused by a perineal strap, the strict confinement necessary, and the moving away of the patient's hips from the proper line, owing to the sinking of the bed. He says:—]

Our observations and experiments have led us to the following conclusions:—1. That the straight position is preferable in a large majority of cases. 2. That it is entirely unnecessary to confine any part of the body except the fractured limb and that to which it is immediately articulated, viz., the pelvis. 3. That the pelvis should be so secured as not to be liable to lateral motion, or to sink in bed. 4. That the groin is not a suitable part for the counter-extending pressure to fall upon. 5. That the tuberosities of the ischia are proper points for such pressure. The correctness of these principles seem to us too obvious to require argument. We shall, therefore, spend no words upon them, unless they are called in question, but proceed at once to speak of our method of reducing them to practice.

First, then, in general terms, we retain the straight splint of Desault at its original length, that is, from the crest of the ilium to several inches beyond the foot, and make the extension in the usual way, by means of the screw, adhesive plaster, and roller. We discard the hitherto excellent modifications of Physick and Gibson, not only because they confine the chest, and prevent that freedom of motion of the upper part of the body, which is so essential to the comfort of the patient, but because we obviate the necessity of such confinement, by securing the pelvis, as already intimated, against all lateral motion, and, also, against the possibility of sinking in bed. In order to prevent the pressure in the groin, we attach the counter-extending pads, and straps, by one end to a cushioned platform, upon which the hips of the patient lie, and, by the other, to a transverse horizontal rod, above and in front of his body, while we fix the upper end of the long splint at a point opposite the side of the pelvis, and independently of all direct connection with the counter-extending pads, or straps. To be a little more explicit, our apparatus consists of two short mattresses, occupying respectively the upper and lower portions of the bed, and also of a central portion, upon which rest the hips of the patient. This central portion is composed of the following parts: 1. A firm, but easy, hair cushion, upon which the hips of the patient lie; this cushion is secured to a board, one foot wide and two feet long, which lies transversely under the body of the patient. Both the cushion and the board present at the lower margin, a large V-shaped opening, for convenience of defecation; and in order still farther to facilitate this function, the cushioned board is elevated several inches upon a second platform, by a strip of board at each end, thus providing a shelf for the bed-pan, which is introduced through an opening formed by withdrawing a section of the lower mattress. Upon the cushioned platform, on each side of the cushion, you will observe a rectangular wooden slide; these slides are so arranged as to be separated or approximated at will, and, by a thumb-screw which passes through a fissure in the horizontal portion of each, they may be fixed at the desired point, so as exactly to embrace the pelvis of any patient. There is, also, a fissure in the perpendicular portion of each rectangular slide, and a screw passing through the same; one of these is to secure the upper end of the long splint, and the other

for the attachment of a splint, eight or ten inches in length, both of which splints are well padded upon one surface, and may be elevated or depressed at will, in order to bring them to the level of the limb, and fixed at the proper altitude by the screws already mentioned. These splints are mutually transferable, in order to adapt the apparatus to a fracture of either thigh.

For the sake of distributing the pressure and making the patient more comfortable, we propose two counter-extending pads instead of one. These we attach by leather straps to the upper surface of the cushioned platform upon which the patient rests, and about thirteen inches apart. These straps pass under the cushion, and, becoming well-rounded pads, traverse the tuberosities of the ischia, pass between the thighs, and thence, perpendicularly, to a horizontal iron rod, at an altitude of eight or ten inches above the patient, transversely to his body, and directly opposite the perineum; this rod is supported by a perpendicular bar at either end, extending upwards from the cushioned platform already mentioned.

Attached by one extremity to the horizontal cross-bar, is a rod running parallel to, and situated directly above, the thigh. The other end of this rod is supported by an arched iron bar, extending upwards from the outer side of the long splint. This is designed to afford direct support to the injured limb, whenever such support is deemed advisable, and will, we believe, be of essential service in preserving the arched form of the femur. A silk handkerchief, or one or two belts of suitable width are to be passed around the limb (either internally or externally to the splints of coaptation), and fastened to the horizontal rod. When this apparatus is used, splints of coaptation are to be applied according to the exigencies of the case, and the views of the surgeon in attendance.

In its construction we have aimed at simplicity; no surgeon of ordinary ability can fail in its application, even without directions. I mention this as a feature of great practical importance. Complicated surgical appliances can never be used except by the few.

It will be asked if this is an expensive apparatus; this, too, is a practical question, and though I must refer the reader to the advertisement on another page for full particulars, I am happy to state that thirty dollars will cover the whole cost (including mattresses); and, in this connection, it should be recollected, that the *same* apparatus is adapted to patients of every size, and to fractures of either thigh, and, also, that it is not liable to get out of order. If the counter-extending pads become worn, they are easily renewed. The bed, being composed of separate mattresses, affords an opportunity for the frequent changing of sheets without disturbing the patient, and cleanliness, as well as comfort, is still farther promoted by the space provided for defecation. The ordinary shovel-nosed bed-pan is not required, but any convenient vessel of suitable size and depth may be used to receive the fæces. The rectangular wooden slide and short splint upon that side of the pelvis corresponding to the uninjured limb, may be temporarily removed, at any time, to enable the surgeon, or the nurse, the more readily to reach any part of the patient's body for examination, ablution, friction, application of liniments for the relief of pain, &c., &c. The counter-extending pad upon the uninjured side may also be temporarily removed, should occasion require, as the use of this pad is not essential—being designed only to distribute the pressure.

Earnestly desiring that this apparatus may be of some service in lessening the anxiety of surgeons, and in ministering to the comfort of the afflicted; and confidently believing that it will enable us, in many cases, to make a more favourable prognosis than we otherwise could, we send it forth upon its mission. Many of our first surgeons have seen it in use at Bellevue Hospital. We do not feel at liberty to quote their freely-expressed opinions; they will, doubtless, speak for themselves in due time. We are perfectly satisfied to subject it to the criticism of a liberal and high-minded profession.

By courtesy of the surgeons to Bellevue Hospital, the principles set forth in the foregoing remarks have been tested in that institution; and, though the number of cases already treated is necessarily small, the results have been highly gratifying. Many distinguished surgeons, both native and foreign, have seen the apparatus in use, and we have reason to believe it has, in every instance, created a favourable impression. Both nurses and patients testify to its convenience, and to the ease with which it is borne.—*New York Journal of Medicine, May*, 1857, *p.* 324.

51.—ON RESECTION OF THE KNEE-JOINT.

By P. C. Price, Esq., Junior Surgeon to the Great Northern Hospital, &c.

[There are unfortunately many cases in which the joint disease has been preceded for some time by disease affecting the spongy structure of the extremities of the tibia and femur. In such cases as these, the removal of the articulation becomes questionable. In addition to this seat of origin, the disease may primarily begin in the synovial, cartilaginous, or fibrous structures of the joint—the ends of the bone then becoming secondarily affected.]

In by far the larger proportion of diseases of the knee-joint which have fallen under my own observation, the mischief has apparently originated in the synovial membrane; and this would appear from general experience to be the most common *locale* for its commencement. Inflammation, however, of a specific form not unfrequently attacks the spongy structure of long bones, and such inflammatory changes are characterised by symptoms which strongly indicate a scrofulous or turberculous habit of body, and exhibit a local manifestation of the disease. Of late years many excellent pathologists have shown that this form of disease is by no means of uncommon occurrence, appearing especially in the children of the poor, who for the most part are ill-nourished and delicate, inheriting, perchance, a specific disposition from their parents, which the more readily encourages the outbreak of the disease. This morbid affection, however, is by no means peculiar to children, and I am inclined to believe that the joints of adults are more frequently destroyed in this way than is generally imagined. As far as I am aware, no surgeon, whose name is associated with removal of the knee articulation, has offered any special comments upon the pathology of this affection, as elucidating and illustrating features of interest in connection with the operation; and it may not, therefore, be devoid of advantage to inquire how far instances of this disease are amenable to the great conservative proceeding? It is, perhaps, of little moment, in considering the question, to determine whether in the majority of cases the disturbance primarily commences in the spongy texture, or secondarily implicates that structure; neither is it of importance to discuss the exact analogy of strumous deposit in bone to genuine tubercle, as the interest of the subject may be better consulted by considering the disease under the character of a morbid material which partakes more or less of the nature of struma as developed in other localities of the body.

The infiltration of the spongy structure of bone by this strumous material may be of two distinct kinds, circumscribed and diffuse; and it is all-important that these varieties be duly understood by the surgeon who lends encouragement to the modern proceeding of resection.

Firstly, with regard to the diffuse variety. The morbid process is at its commencement ushered in by a general low inflammatory state of the open network of the bone, the surface so affected appearing congested, and of a dark red colour, owing to the medulla contained in the bony cells being mixed with blood. This condition may sometimes be recognised by the increase of temperature about the parts so involved, and by a sensation which, if not amounting to absolute pain, is sufficient to attract not only the fears of the patient but the attention of the surgeon. Both these symptoms may obtain in degree, according to circumstances; and I have noticed on several occasions that the disposition to annoyance is more marked in patients of a plethoric habit of body than in those who labour under a more sallow and cachectic disposition.

If this condition into which the affected parts have fallen be recognised, it is not impossible, by judicious treatment, to arrest the further development of the disease; but should it continue, organic changes soon follow, which rapidly involve the integrity of different structures. When this inflammatory condition is well established, the cells of the bony structure not only appear congested, but subsequently contain a substance which is more or less fatty, oily, lardaceous, or gelatinous in consistence; and, provided the morbid action has obtained to the medullary cavity, the medulla itself may become the seat of disease. The bony network itself soon becomes implicated, inflames, expands, and softens, and to such an extent, that it may easily be broken down by the slightest pressure.

This further increase of the disease is accompanied by a chemical alteration in the constituents of the bone. The earthy material, which in health forms so considerable a portion of the osseous composition, greatly diminishes, and in some instances almost entirely disappears. Not only are the parts so involved deprived of their inorganic material, but the compact structure immediately surrounding them likewise becomes affected, and converted into a mere shell, possessing apparently little similitude to normal bone. The periosteal covering also sympathises, thickens, and loosens in its attachment. When this morbid affection is confined to the extremity of the shaft, the further changes that may take place are dependent on and modified by circumstances. The disease may appear suddenly to be arrested, and to call for little aid from the surgeon. If, however, the inflammatory state of the parts has somewhat subsided, liquefaction of the tuberculous or strumous deposit may slowly and gradually take place, accompanied with ulceration, which destroys the cellular structure of the bone, and advancing towards the more compact, perforates the already thinned walls. But it not unfrequently happens that the deposition of the foreign material leads to more extensive and rapid mischief. Suppuration may supervene upon a fresh attack of inflammation, and with celerity not only destroy contiguous, but give rise to an amount of suffering and distress which affects the already debilitated constitution, and demands the adoption of decisive measures. When either or both of these conditions have obtained, a communication with the surrounding soft tissues is soon effected. The irritating matter being voided into cellular and other structures, favours the formation of abscesses, which, when opened or bursting of themselves, admit the exit of a discharge which is composed of the softened strumous material, more or less mixed with blood, pus, and the debris of carious or necrosed bones. It would appear from the above description, that this form of disease may exist for some time, or even run its course, without including the neighbouring articulation; but, unfortunately, it is seldom that the joint escapes the destructive process. At an early period the articulation begins to sympathize, and ere long becomes seriously affected. When the first stage of the disease is well established, and the foreign material which has been deposited in the cancellous texture begins to soften, the boundaries of the joint become invaded. By changes degenerative and destructive the cartilages disappear, and permit the extrusion of the morbid contents of diseased bone into the joint cavity. The synovial membrane, if not already involved, thickens, and greatly alters in structure; its functions are destroyed, and, instead of fulfilling its proper duties, becomes the cause of more serious implication. The ligaments, put upon the stretch by the increasing size of the joint, soften, and permit deformity and luxation to take place. The presence of irritating matter in the closed cavity soon leads to suppuration, and perforation of its walls. Thickening and abscesses include cellular and other tissues, and ere long circuitous channels are formed, with external openings, which permit the escape of the cause of so much disturbance.

Of all morbid affections, perhaps, there is no one class more difficult of correct appreciation than diseases of joints. Daily experience proves how utterly impossible it is, on many occasions, to form a right estimate of the extent to which both hard and soft tissues are involved; and to point out the exact seat of disturbance or to diagnose the nature of the affection which calls for so serious an interference, as amputation or resection.

I have not unfrequently seen limbs removed for an amount of disturbance in the joint which was deemed irreparable prior to being amputated, and more frequently I have witnessed the operation on occasions in which the amount of disease was supposed to be much more trivial than subsequent examination showed. Whenever, therefore, there is the least doubt as to the nature and extent of disease in a condemned joint, I conceive the surgeon will be but acting with discretion in first obtaining a clear view of the interior of the articulation prior to making up his mind as to the nature of the operation he is about to perform. Old prejudices must be done away with, and ancient practices expunged. The time has arrived when routine, so detrimental to the cause of humanity, must be abolished, and customs, doubtless excellent in their day, must no longer remain unquestioned. As improvements daily take place in the character of surgical instruments, so with the improvement of the machine should be the advance in progress of the motive power.

Many, I know, will and do object to what may seem an unnecessary prolongation, and a somewhat new innovation to the steps of an operation, and will argue that such a proceeding is fraught with an additional risk to the patient. But such fears are more imaginary than real. Mr. Butcher has well considered this point in his last excellent memoir, "On Excision of the Knee-Joint," and since its publication it has fallen to my lot to become acquainted with two more cases, in which the state of the joint was well examined, but actually resected in the hope of retaining to the patients useful limbs, before it was evident that amputation would be the wiser proceeding. If the patient be under chloroform, insensible to pain, separated from passing events, and under the hands of an able operator, I confess I can myself see but little additional risk that is thereby incurred.

In the memoirs of Mr. Butcher on "Excision of the Knee-Joint," several operations have been recorded as undertaken for strumous "disease of the joint." It is to be regretted that the term "strumous" is so frequently used without a more distinctive meaning. I wish particularly to make a grand distinction between diseases partaking of the character of struma, commencing within the cavity of the articulation, and those originating in the cancellous structure of the heads of the bones entering into the formation of the joints. This distinction is all-important; for I do not hesitate to say that every diseased joint, with the exception of that form arising from diffuse strumous infiltration of the heads of the two bones, is, in general, well suited for the adoption of resection in preference to amputation.

Mr. Butcher gives a short account of eighty-two cases in which the operation of removal of the articulation had been adopted. Not more than a seventh of this number are recorded as strumous, but in every one of these cases, with the exception of a solitary instance, the strumous nature of the disease would appear to have been manifested in the synovial membrane of the joint, or to have appeared in the open texture of the heads of the tibia and femur under that form which is termed circumscribed infiltration.

I have been at some pains to ascertain the pathological condition of the ends of the bones in those cases which are described as "strumous," and my thanks are due to several surgeons for the kindness with which they have answered my inquiries. The solitary instance to which I allude fell under the notice of a most distinguished surgeon, Dr. Keith, of Aberdeen. This case is so full of interest, and as yet unpublished in detail, that I take advantage of the kindness of Dr. Keith, who allows me to use it.

The patient was a man aged 33, the subject of extensive disease of the knee-joint and neighbouring bones, which had existed for eleven months. Excision was performed on March 10, 1855. "One inch and a quarter was taken off the end of the femur, and half an inch from the head of the tibia. The bones were expanded, the interior reddish, and every cell filled with a lardaceous deposit. On sawing through the head of the tibia, an abscess in the very centre of that bone was opened, from which a tea-spoonful of ripe pus escaped, leaving a thimble-shaped cavity. Three abscesses outside and around the joint were also laid open." The account forwarded to me by Dr. Keith is so graphic, that I cannot avoid transcribing it:—

"Well, this case got every care that my skill could devise. I was dresser myself, and fought on for 222 days, and at last, to save his life, gave in and amputated the thigh on October 20, 1855; and on November 30 he was dismissed cured, and at this date (May, 1857,) commands a trading brig out of the port of Aberdeen, walking on an artificial limb."

The ends of the bones, in this very interesting case, exhibited all the distinctive characters of destruction by diffuse strumous infiltration; and the conclusion arrived at by the operator is so just, that, should no companion case be brought forward, it may serve as a beacon to warn those less experienced from attempting a similar proceeding. "Reason told me so (I was wrong) before I operated; but I tried it. I thought an open joint, with the free discharge and irritation lessened —that good keep, and other suitable treatment, might remedy even the disease of the bones; but no, no."

From the details of this singular case it would appear that the operation of resection is not adapted for the treatment of knee-joints destroyed by diffuse stru-

mous infiltration of the articular extremities of the tibia and femur; and such a conclusion is, I believe, fully justified.

The two great objects to be obtained by resection of a diseased articulation are —removal of every trace of disease, and giving to the patient a good and useful limb. To insure the former requisite it is absolutely necessary that such cases only should be submitted to the operation in which the nature and extent of the disease is clearly and distinctly ascertained not to involve a greater amount of structure than can be removed with propriety. Unfortunately, the diffuse form of strumous infiltration, in the majority of instances in which it destroys the integrity of the knee articulation, is too extensive to be entirely removed, and therefore the operation is decidedly inappropriate for this class of disease.

That the patient may possess a useful limb, in every way superior to a wooden substitute, it is imperative that the cut surfaces of the bone should be firmly bound together by union of such strength as will enable all the motions of progression to be performed with comfort and facility. It is by no means absolutely necessary that the bond of union should be completely osseous in character, although I am aware that many, not particularly well informed on this interesting subject, deem such a termination indispensable.

I am acquainted with instances where an admirable degree of usefulness is afforded by limbs in which union of the surfaces of bone is, if not altogether, in a great measure fibrous and flexible; and it is not improbable that ere long it may be deemed desirable to retain a certain degree of motion, instead of obtaining a firm osseous anchylosis. But it is questionable if reparation even of the latter kind will take place between the exposed surfaces of the two bones. It is tolerably certain that no new bone will be formed, as the mother structures are incapable of accomplishing such repair, and the only junction that could with any reasonable hope be expected, would arise from parts external to the osseous walls. If such cases be subjected to the operation of resection, it will probably be through ignorance of the true state of the affection. Various terminations may follow the unwise adoption. It may happen, that for some considerable time everything may seem to progress favourably. The soft parts may heal to a great extent, but no union may be discernible as arising between the cut surfaces of the bone, although experience points to the contrary hope, and a natural dread of amputation may for a longer period encourage the patient and surgeon. Or a more serious termination may quickly follow the operation. The diminished vitality of the divided structures, the debilitated constitution of the patient, and the inappropriate manner in which the subsequent treatment may be carried out, may favour the lighting up of unhealthy inflammation, which is not improbable to end in destruction of the exposed bone by caries or necrosis. A timely resort to the knife and gouge may for a period avert further mischief. This has happened once in my own practice, and the removal of the dead portions of bone was attended with a beneficial result. Ultimately, however, the withering powers of the patient, distressed by the constant irritation of an unclosed wound combined with unhealthy and extensive suppuration, may call for amputation, as in the case recorded by Dr. Keith, and, if the truth were known, as has more frequently happened in the practice of other surgeons.

No generous diet or the exhibition of bone-making material, as phosphate of lime, is sufficient to cure this diffuse form of disease, even when the greater part may have been removed in the operation by resection; and, unless future experience shall dictate to the contrary, I must, although an ardent supporter of this great and useful operation, unwillingly give preference to removal of the disease by amputation of the thigh.—*Med. Times and Gazette, Aug.* 1, 1857, *p.* 111.

52.—ON THE SUCCESSFUL TREATMENT OF HYDRARTHROSIS OF THE KNEE-JOINT, BY PUNCTURE AND INJECTION OF IODINE.

By Dr. Robert Macdonnell, Surgeon to St. Patrick's Hospital, Montreal.

[The practice of treating hydrarthrosis by puncture has been condemned by recent British writers on surgery. The author was induced to attempt this method from

the successful results obtained by it in the treatment of hydroceles and synovial bursæ. He says:—]

I have now treated successfully five cases of hydrarthrosis of the knee-joint by this method, and as three of them have been witnessed by my brother practitioners in this city, I prefer giving them in illustration, to detailing my two other cases which occurred in private practice, and of whom I have had no information since they left Montreal. It is enough to mention, that they did not leave till they were quite satisfied that a cure had been effected. In almost all particulars their symptoms both before and after the operation, resembled those of the patients whose cases I am about to detail:—

Case.—A. P., a cooper by trade, aged 26, consulted me, April 11th, 1853, on account of an affection of the right knee-joint of four years' duration. He was a thin middle-sized man, without any marks of scrofula about him, of dark complexion and bilious temperament. He stated that the present disease began four years before, with pain in the right knee, which gradually increased, and was soon followed by perceptible swelling of the joint, and these symptoms becoming daily more distressing, he consulted several surgeons of this city, and adopted various remedies recommended by his friends, without benefit. For a year before I saw him, he was unable to work at his trade and could not walk, except with the aid of a crutch and cane. It is unnecessary to detail the various plans of treatment that had been pursued; suffice it to say, that the joint bore evidence of all the usual remedies for chronic synovitis having been employed. On examination, I found the joint much enlarged, being four inches greater in circumference than the opposite one: but this enlargement was not so perceptible in the joint itself, as in the circumference of the thigh immediately above the patella, where there was a large oval-shaped swelling extending along the outer side of the tendon of the rectus femoris, to a distance of nearly five inches, and communicating under that tendon with another swelling, of a similar shape but much smaller, on the inner side of the thigh. At each side of the ligamentum patellæ there were small tumours which fluctuated and communicated with those above, giving to the joint the *bosselé* appearance so well described by Bonnet. The integument was not discoloured except from the effects of previous treatment; there were no enlarged or tortuous veins on the surface of the tumours; pain at the lower edge of patella and inner side of the knee increasing at night, or after attempts at walking, was complained of. When at rest, the leg was usually flexed, and then the joint presented a more globular form than when the leg was fully extended; the patella appeared on the summit of the swelling, but when extension was made, the tendon of the rectus, the patella, and ligamentum patellæ appeared depressed, and the tumours already described, became better developed. There was no emaciation of the leg or thigh.

Being satisfied that the ordinary plan of treatment would not succeed, I determined to puncture the joint and let out its contents, as from the great size of the swelling, I was anxious to reserve the injection of the sac until it had become somewhat diminished, in the event of its filling again after puncture. Assisted by Dr. Jones, Surgeon to the Montreal General Hospital, I tapped the outer and larger tumour with a small hydrocele trocar, taking care to make the puncture at the part most remote from the joint, and drew off a large bowlful of fluid, of a straw colour and closely resembling the contents of a hydrocele. The reader may conceive the quantity of fluid contained in the sac, when he is informed that I brought away, for chemical and microscopic examination, the full of a Florence oil-flask, besides what was spilt and left at the patient's residence. The operation produced no inconvenience, adhesive plaster was put over the aperture, and the joint bound up in a wet bandage; another wet bandage was carried from the ankle to a distance above the knee, a padded splint was placed under the knee, and so fixed above and below, as to prevent the least motion in the joint. Small doses of tartar emetic were administered, low diet prescribed, and directions given that the bandages should be kept moist with lukewarm water.

It is unnecessary to detail the daily symptoms. For the first twenty-four hours there was no pain complained of, and the patient appeared very comfortable, but on the second day, the joint began to swell, and I was obliged to loosen the bandage slightly. The swelling increased gradually, but without any increase of suffer-

ing for the next ten days. I now determined to avail myself of the reduced size of the hydrops, to puncture it again, and inject the sac with iodine, which I did on the 12th day from the first operation. This was done in the following manner:—The leg being extended, a wet bandage was placed round the lower part of the knee-joint, and carried up to a level with the upper edge of the patella. It was given in charge to an assistant with directions to draw tightly upon it, whilst the fluid flowed through the canula. By this means the contents of the lower part of the synovial sac were pushed up into the pouch above the level of the articulation, making the upper tumour more full and tense, and serving to protect the articulating surfaces from the first effects of the injection. When the fluid was drawn off, about *two drachms of the strongest tincture of iodine with an equal quantity of lukewarm water* were injected through the canula, and allowed to remain; care being taken, by changing the position of the joint, and manipulating the sac, that it should come in contact with the whole inner surface of the synovial membrane lying in front of the femur.

The wet bandage was now carried round the limb, to a distance of six inches above the patella, and moderate and equable pressure was thereby exercised upon the point. A long padded splint was applied, and perfect rest of the joint thus secured. The patient complained next day of severe pain, but not so great as to oblige me to remove the bandages. An opiate was given for the first three nights, and after that, the patient felt so well, that he left his bed on the fourth day, and I ceased to attend him at the end of three weeks. I have not seen him since, though I hear frequently of him. He soon returned to his trade, and has worked at it for the last four years without any return of the disease. For some time after the operation, the affected limb remained weak, and yielded in walking, but his friends assure me he is now quite well, and walks without the least lameness. At his recommendation the patient whose case immediately follows, was sent to me by a society that had supported him for the last two years.

Case 2. A. C., aged 40, cooper, a dark-complexioned man of slender make and unhealthy appearance, consulted me under the following circumstances:—For the last *four* years he had suffered from an affection of the left knee-joint, which had rendered him unable to earn his livelihood for two years past, since which period he has been supported by a charitable institution in this city. He states that he has been treated by *thirteen* medical men, and his knee-joint bears marks of frequent cupping, moxas, issues, and pustulating liniments and ointments. He has been blistered several times, and has taken a great deal of medicine internally. The usual quack nostrums resorted to by persons of his rank, when they have in vain sought relief from scientific surgery, have also been tried in succession, and so convinced was he that it was useless to attempt anything further, that he had abandoned all hope of recovery, when he heard of the patient whose case has been described. It is unnecessary to detail at great length the symptoms he complained of, but in a few particulars his case differed from the former one. *The leg and thigh were much emaciated*, the swelling was greatest on the *inner* side of the knee-joint and the corresponding side of the patella, and though the joint appeared much larger than the other, it was only two inches greater in circumference. The patella was pushed forward very much, and on examining the inner side of the joint, the crackling sensations spoken of by authors were easily detected. The leg was flexed, and extension caused pain. During the day he suffered less than at night. I advised him to enter St. Patrick's Hospital, where I operated on him, on the 13th April, 1857, being assisted by my colleagues Drs. David and Howard.

The puncture and injection were performed precisely as in the former case, and the same precautions taken to have the joint firmly bandaged from below. I need not fatigue the reader with the daily details of the case; for, truth to say, nothing worthy of note occurred. There was no swelling or pain in the joint, no fever, no uneasiness whatever; and though my directions were very explicit that he should not attempt to move the joint, yet I had great difficulty in persuading him to remain quiet in bed. The wet bandage was continued for ten days; then a dry one was kept applied for a few days; and, finally, the knee-joint was put up in a starched bandage, and gentle use of the limb permitted. From the beginning till the end of the treatment, there was not a single symptom present to cause one moment's anxiety.

Case 3. This case, also witnessed by my colleagues, Drs. David and Howard, is still more encouraging; for, though the operation was performed under very unfavourable circumstances, yet the perfect success of the treatment must do much to remove the prejudice that exists against it.

A dark complexioned middle-sized man, aged 25, a carriage-maker, who had come from the United States to consult me, presented the following appearance:—The right eye was prominent, owing to caries of the malar bone which had left a deep depression, corresponding to its orbital portion; the nose was depressed slightly in the centre, from the destruction of both lachrymal bones, with corresponding parts of the nasal and superior maxillary bones. The surface of the body was marked with scars, the results of former ulcerations; and from the carious bones of the nose fœtid discharge was taking place, and the two holes above the diseased lachrymal bones were filled up with pledgets of charpie; a most offensive fœtor was exhaled from his nose and mouth. In addition to the above diseases, he presented a well marked hydrarthrosis of the left knee, of *seven* years' duration, which had been so distressing for the last two years that he had been almost unable to put the foot to the ground. For the first year, he says, he was able to keep down the disease by rest, counter-irritation, and internal remedies. For the next three years, he was able to walk about with the aid of a staff, and to work at some parts of his trade which did not oblige him to stand. He also sought other employments requiring less use of the limb. For the last two years he has been under medical treatment in different hospitals in the United States; and though the disease of the facial bones is distressing, yet, as the affection of the knee prevents him earning a livelihood, he is more anxious about it than his other maladies.

The left knee was enlarged to the extent of two inches and a half, both below and above the patella, and the enlargement was more of an oval shape than globular, and was not greater on one side of the rectus femoris than the other, but seemed to lie mostly under its tendon, pushing it forward and giving to the upper part of the swelling an abrupt commencement. When pressure was made upon one side of the rectus tendon, the fluid was pushed to the opposite side, making a prominent tumour. The fluid could be easily made to pass from one portion of the joint to the other. The integument appeared thicker and paler than in the two former cases, and was not so much discoloured from local treatment. As the patient had himself witnessed the result of the treatment in the second case, he gladly consented to my proposal to adopt the same plan with him.

The puncture and injection were performed as already described, on April 28th, 1857. The quantity of fluid drawn off did not amount to more than six or seven ounces. It was clear and yellow, presenting the usual characters of the contents of these dropsies. The integument was not thinned so much as in the four other cases. No pain or swelling followed the operation, and notwithstanding his cachectic appearance and bad constitution, the progress towards cure was uninterrupted by the occurrence of a single bad symptom.

Many of those who object to the above plan of treatment, do so under an erroneous idea of the nature of the disease for which it is recommended, and also of the results that are expected to be derived from it. Thus, we find some who have written and spoken against it, confounding simple chronic hydrarthrosis with white swelling (tumeur blanche), and objecting to the injection of a dropsical joint, because the treatment did not succeed in a completely disorganized and suppurating articulation. Now, I would wish it to be distinctly understood, that it is to *pure uncomplicated chronic hydrops* of the knee-joint that my suggestions as yet apply; for I have not employed the treatment in any other joint, and though I do not believe that injection of iodine would do any harm to a joint already destroyed by ulceration, yet I wish the point to be clearly understood, that it is not in such affections I recommend it. It has also been stated that serious consequences must necessarily follow the mere puncture of so large a joint, and *à fortiori*, the injection of it with iodine, or any other irritating substance, must be extremely dangerous. I shall not here occupy my reader's time in proving the difference, as to consequences, between the puncture of a joint in its *physiological* condition and a similar wound inflicted upon it in its *pathological* state. Until the surgeon shall have acquired clear and distinct ideas on this point of practice, he cannot under-

stand the rationale of injections into joints, the seats of chronic synovial effusions; nor of incisions into large and small joints already in a state of suppuration, as recommended by Gay and others, and which (as regards the smaller joints) I have myself often performed.

There is another objection urged against this practice, founded on the supposition that excessive inflammatory action must necessarily follow the injection, and that anchylosis or even the death of the patient might ensue. In this, as in other instances, one fact is worth a hundred theories. Puncture and injection have been performed not only without bad consequences, but with the greatest success; therefore, to discuss this point any further would be fruitless. But some of the opposition to the practice may be ascribed to the views of Bonnet himself, and to his method of operating. He injected the joint, with the express object of exciting an acute arthritis, which being combated in the usual manner, led to the removal of diseased action from the articulation, and no steps were taken to prevent this excessive inflammatory process. Now, it is evident, that, as in hydrocele, the radical cure is often effected, not by inducing violent inflammation of the sac, but by modifying its diseased secreting action, so we should endeavour to induce merely a slight change of action in the synovial lining of the joint; and adhere, as closely as possible, to the rule laid down by Velpeau and Cabaret to procure in shut cavities, containing effused fluid, an irritation which should be constantly adhesive and never purulent.

By the method which I recommend, the fluid is forced upwards from the articulation to the synovial bag above the joint lying on the anterior surface of the femur, and when the fluid is withdrawn and only half an ounce of iodine solution injected, the opposed surfaces of the sac are brought into contact and retained in that position by the gentle and equable pressure of a well applied wet bandage. By this means air is prevented entering the joint, the injected fluid is spread out evenly over the whole synovial surface, and becomes still more diluted by admixture with the secretions of the parts, and a healthy action taking place, excess of exudation and engorgement are prevented, and it is not unlikely that adhesion occurs in the opposed surfaces of the dilated pouch in front of the femur. This result is still further favoured by retaining the joint in an immovable position by bandaging it to a straight splint, and by keeping the patient upon cooling diet. Bonnet recommends us to push the trocar down in a perpendicular direction from the front of the tumour till it strikes the femur. I see no advantage in piercing the synovial membrane in two places, and in wounding the femur; nor have I followed his other direction to inject a quantity of iodine solution, equal to the amount of fluid drawn off. In my practice I have thrown in only two drachms of strong tincture mixed with two of lukewarm water.

In conclusion, I would wish it to be understood, that I do not advise the above line of treatment to be pursued, except in simple uncomplicated hydrarthrosis, that has resisted all other remedies, and that has led to loss of use of the limb, or has prevented the patient earning a livelihood, and enfeebled his constitution by protracted suffering.—*Montreal Medical Chronicle, June*, 1857, *p.* 6.

53.—IMPROVED METHOD OF AMPUTATION AT THE ANKLE-JOINT.

By Richard Quain, Esq., F.R.S. (Reported by Vincent Jackson, House-Surgeon to University College Hospital.)

[Mr. Quain has lately made a change in his mode of performing this operation; in a clinical lecture lately, he said,]

"It appears to me, and indeed it has always appeared to me, that the chief advantage of the operation for removing the foot at the ankle-joint, is due to the fact, that the patient is enabled in progression afterwards to bear directly upon the stump. After any other amputation higher up—that for instance above the ankle, which in other respects is equally if not more advantageous, the person cannot bear his weight upon the end of the stump. Ulceration of the integument would follow; while after an amputation at the ankle-joint, with a flap taken from beneath the heel—from structures, that is to say, which are organized for the pur-

pose—with that covering the bones, pressure is sustained by the end of the stump without injury.

"Now as to the plan of performing the operation:—When it was first suggested that the flap should be taken from the under surface of the foot, instead of being made from the front and sides of the joint, as previously practised, Mr. Syme, the author of the suggestion, advised that an incision should be made from one malleolus to the other beneath the os calcis. But the dissecting back the concave flap thus marked out from the projection of the heel is a tedious process. One has to dissect in a confined space, over the irregularities of the bone; and it has often happened that the integuments have been perforated behind the heel. Moreover, if you read the histories of cases fairly reported, in which the operation has been performed in that way, you will find that counter openings were subsequently required to evacuate pus collected in the cup-like flap. It is in consequence of these evils that I was led to operate in a different manner in some cases lately. Thus, after the incision from malleolus to malleolus under the os calcis, I make a straight incision at right angles with the first, to the back part of the heel on the outer side of the foot, a little above and parallel with its outer margin—between therefore the point of the outer malleolus and the margin of the foot. This plan facilitates the dissection from the os calcis, and hastens the operation. Independently of the direct advantage of this method of operating, I may remind you, by way of answer to possible objections, that the blood vessels (anterior tibial and posterior tibial) as well as the thicker soft structures, lie at the forepart and inner side of the ankle-joint and beneath the foot. It is upon the careful preservation of these parts that the nutrition and the firmness of the stump depend. At the outer side, on the contrary, the os calcis is covered only with integument, while the slender blood-vessel, the end of the peroneal artery, as it runs along the periosteum, is injured, probably made useless, during the dissection. Hence the incision through this part, while it sets free the flap all around and hinders the bagging of purulent matter, does not interfere with any important structure.

"It may be mentioned, too, that in the recorded cases of the amputation as usually performed, the outer part of the flap, the part now in question, had often been mentioned as having sloughed. This fact is accounted for by the conformation just referred to."

As no mention is made in the foregoing observations of other parts of the operation, it perhaps should be stated that Mr. Quain makes the plantar part of the principal flap short, though long enough to cover fully the end of the tibia; and that he forms an anterior flap, which in the cases above related met the larger one easily. He dwells on the advantage of so cutting the edges of the two flaps, by bevelling the parts beneath the integument, that they shall in the dressing meet skin to skin as far as possible. This is done with a view to avoid the need for the formation of much new skin during the cicatrization.

I may likewise mention, that with the same view of facilitating the process, I have seen the operation performed with an incision directed obliquely backwards from the malleoli to the point of the heel. This plan, of course, removes the difficulty by omitting the only difficult part of the operation; but the structures from the sole of the foot, those "organized for the purpose" of bearing the weight of the body in progression, are excluded from the flap.—*Med. Times and Gazette, Oct.* 10, 1857, *p.* 369.

54.—ON EXCISION OF THE ELBOW-JOINT.

By E. R. Bickersteth, Esq., Surgeon to the Liverpool Royal Infirmary.

[The success attending operations on the elbow-joint of this nature is very great, providing the cases are well selected and the after treatment properly managed. Mr. Bickersteth has frequently examined the bones in cases in which amputation has been performed for caries of the bones of the elbow-joint, and has not met with a single instance in which the entire disease might not have been removed by excision of the articular extremities of the bones.]

Excision of the elbow-joint can scarcely be considered a dangerous operation, unless undertaken in the unhealthy wards of a hospital. Out of nineteen cases in my own practice, only two died from the effects of the operation: one a woman, who was seized with delirium tremens in its most severe form, on the twenty-sixth day after the operation, and who died exhausted in thirty-six hours, during which time every means failed to procure sleep, or even a moment's rest, from the most violent excitement; the other, an emaciated and feeble woman, sixty-four years of age, sank exhausted between the second and third week following the operation.

In performing the operation, two objects should be constantly borne in mind: first, to remove all the diseased bone; and second, to do this in such a way that a useful and movable joint may result. To obtain these two objects, whatever the variety of extent or situation of the disease, one uniform plan of proceeding should be adopted. I have already mentioned how rarely the disease extends beyond the actual articular extremities. Not unfrequently, however, the caries is confined to the extremity of one bone, or even to a limited portion of one articular surface; and in these cases, attempts have been often made to obtain a cure by the removal of the diseased portion only, under the supposition that this partial operation is less severe, and that excision of all the bones is not therefore justifiable. The results of cases of partial excision prove, however, that frequently the disease afterwards extends to the other bones, and complete excision or amputation is eventually required; and that, even should the partial operation be ultimately successful, it gives rise to equal or more severe suffering and fever, than complete excision; while the usefulness of the arm, from the degree of anchylosis that always occurs, is not to be compared with a successful case of complete excision. I believe, therefore, that if it is necessary to remove any part of the articular surface, it is far better, and at the same time not more dangerous to life, to take away the whole.

Much doubt has been expressed with regard to the exact amount of bone it is desirable to remove, in order to afford the prospect of a useful and movable joint; and perhaps no point in the operation requires nicer judgment or more experience for its determination. If too much be removed, the arm will be left dangling and useless; if too little, the joint will be stiff and more or less anchylosed. The exact amount can only be determined by the peculiarities of each particular case; and often, after the excision has been completed, and all the disease has been removed, the experienced operator will find it better to take off another slice from one of the bones, in the expectation that thereby a more useful articulation will be formed. As a general rule, however, it may be said (presuming of course that all the disease is removed) that the section of the humerus should be made through the broad expanded portion just above the condyles, and that the ulna should be cut through immediately below the lesser sigmoid cavity; the head of the radius can afterwards be snipped off with the bone pliers, on a level with the section of the ulna.

Several different plans have been proposed for performing excision of the elbow. Some have recommended that the joint should be exposed by a semicircular flap raised from its posterior part; others have advocated that the incision should be made in the form of the letter T; and others again, that the part is more fully and easily exposed by adopting the H form of incision. The latter, I believe, is the best, and is that which is always practised by Mr. Syme, who has probably performed this operation more frequently than any other surgeon. In the following description of the steps to be adopted, I do not claim any novelty, but merely desire to mention the plan, which in my own practice I have found at once simple and easy of execution. An assistant holds the arm firmly and steadily, while the operator discovers, with the thumb nail of the left hand, the exact position of the ulnar nerve as it passes over the internal condyle. Protecting the nerve in this way, he then plunges a strong bistoury, its back being placed against the nail of his thumb, directly into the joint, and carries it across the olecranon to the opposite side of the arm. Having thus made the transverse incision, he completes the form of the letter H by making lateral incisions of sufficient length. The flaps are then reflected; and the olecranon, being exposed, is cut off with strong bone pliers. The joint is now fairly opened, and the next

object is to detach the ulnar nerve from the dangerous position it occupies behind the internal condyle. The external lateral ligament must first be divided, and then the assistant who holds the arm and stands on the opposite side of the patient, must be directed to push the radius and ulna away from him, while he keeps the humerus perfectly stationary. A partial lateral dislocation of the joint is thus produced, and the ulnar nerve, being carried along with the displaced forearm, is lifted out from its bed, and requires only a little careful separation from its cellular attachments before it can be passed over the condyle and placed beyond reach of danger. The end of the humerus is then sawn off, and afterwards the extremities of the ulna and radius, either separately or together. Two or three vessels usually require ligature, and particularly the posterior ulnar recurrent, which often bleeds freely. Before closing the wound, it is well to place the arm in position, so that an opinion may be formed whether sufficient bone has been removed. If the transverse incision does not come together easily, without actual contact of the opposing sawn surfaces, it will be better to remove half an inch more bone from one extremity, as by so doing there is much less fear of the new joint becoming anchylosed. When the flaps are brought together, the arm should admit of being bent at right angles without any locking of the bones, or any tension on the transverse incision. Several sutures should be introduced, more especially into the transverse incision, the edges of which must be brought into accurate contact, as upon their union by the first intention much of the future success depends. Large pads of lint are then so applied as to protect the wound and at the same time not prevent the free discharge of matter. The arm is placed in a position midway between extension and semiflexion, and a bandage five or six yards in length wrapped round and round the joint, in the form of the figure 8. The patient should be placed in bed with the head low, and the arm carefully and evenly supported upon a pillow, so arranged that the hand rests over the lower part of the abdomen.

It is of great importance that perfect quietness be observed for the first few days after the operation. The least movement of the body disturbs the elbow, and not only gives pain, but retards the healing process. At the end of forty-eight hours the bandage may be cut off, the pads of lint removed, and the sutures in the transverse incision taken out. At the same time, two or three long narrow strips of plaster should be placed lengthways along the back of the arm and forearm, so as to give support to the union of the transverse incision. If the sutures in the longitudinal incisions have given rise to any sloughing or inflammation, they also had better be removed at the same time; but if this has not occurred, it is well to leave them for a day or two longer. It is advisable to finish as much of the dressing as is practicable before raising the arm, and when it becomes necessary to lift it, the greatest care must be taken to prevent any displacement of the incisions. After the sutures in the longitudinal incisions have been removed, two other strips of plaster should be arranged at right angles to those already placed at the back of the arm. They should nearly, but not quite, encircle the limb; one being above, the other below the bend of the arm. They should not be placed too near the transverse incision, nor obliquely across it, as in either case they would tend to press the flaps inwards upon the ends of the bones. If they are arranged parallel to the transverse incision, one about an inch and a quarter above it, and the other the same distance below it, they will have the effect of keeping the edges of the incision in contact, without exercising too much pressure on the interval between the bones. The water dressing and figure of 8 bandage must then be applied, and the same dressing repeated daily till the incisions have firmly united. When this has taken place, which will usually be from a week to ten days after the operation, the joint, hitherto kept perfectly quiet, should be moved passively every day. The patient should get up, and have the arm placed in a sling, with directions to take it out occasionally and move it as freely as can be borne without giving pain. At this stage of the curative process, there is a great tendency in the new joint to become stiff, and the more this tendency can be overcome by early, free, and frequent passive movement of the part, the more useful and perfect the arm will be. But care must be taken lest the exercise is carried to excess, or the joint will become inflamed, and perfect rest rendered necessary.

It will thus be observed that the after treatment varies in the different stages of recovery. For the first week, or until the transverse incision has firmly united, our efforts are mainly directed to prevent any movement of the part. Afterwards, we encourage as far as possible free movement, knowing that if not quickly accomplished the difficulty of obtaining it daily increases.

I have been minute in describing the means of obtaining the speedy union of the incisions, because I believe that the future usefulness of the arm depends very much upon this point. If the transverse incision does not unite by the first intention, or if the plasters are improperly arranged so as to press on the space between the bones, the flaps are almost sure to sink in, the upper one to unite upon the end of the humerus, and the lower one upon the extremity of the ulna. And if this untoward event occurs, it is hardly possible that any save the most imperfect joint can be formed, the probability being rather that the arm would be altogether useless. In the hope of securing more complete rest of the part during this period, many have recommended, and made use of, splints of various sorts; but I am satisfied, after repeated trials, that apparatus of this kind is best dispensed with, and that nothing answers so effectively for restraining all movements as the well applied figure of 8 bandage.

Hitherto I have spoken of excision for the treatment of incurable disease, but there is another class of cases in which the operation has been performed with equal propriety and the most signal success—cases of anchylosis of the arm in the straight position. When excision of the elbow was first proposed, it was the constant endeavour of the surgeon to obtain firm anchylosis of the bones in the most favourable position. In spite of all his care, however, a false joint sometimes formed, and then it was observed that the arm was more useful in this state than when anchylosed. In the present day we cut out the anchylosed joint, in the hope of obtaining in its stead a useful and movable articulation. Partial or complete anchylosis in the extended position is not an uncommon result from the spontaneous cure of scrofulous diseases of the elbow during childhood. The same deformity, also, frequently occurs from the improper treatment of oblique fracture of the lower end of the humerus into the elbow-joint. But from whatever cause it arises, the distress and inconvenience occasioned by straight anchylosis of the elbow are so great that the patient is usually glad to submit to any means affording a prospect of remedy. I have met with two cases in which both arms were fixed in the straight position, and nothing could exceed the helpless condition of these unfortunate subjects. Unable even to feed themselves, they were entirely dependent on the assistance of others. In each case the right elbow was excised, and the joint rendered useful and movable.

In operating for anchylosis, the same general directions must be followed as are already described. The surgeon should, however, be prepared to encounter much greater difficulties than in the operation for disease of the joint. All the relationships of the part are destroyed, and the bones, if not truly anchylosed, are so firmly united that considerable force is required to break down the adhesions. It is in these cases more particularly that it is desirable to remove the bones so freely that a considerable interval is left between the divided extremities; for if this is not done, the natural tendency of the bones to reunite is so strong that no efforts on the part of the surgeon, or of the patient, will prevent the joint from again becoming stiff. In an article recently published by Mr. Butcher, of Dublin, 'On Excision of the Joints,' he proposes what he calls "a new operation, in cases where the joint has been firmly anchylosed in the straight position of the injury." His plan consists in making a transverse incision across the back of the elbow, introducing his resection-saw in front of the joint, between the artery and the bone, and cutting through "all resisting parts from before backwards;" but without the removal of any bone whatever. Fortunately Mr. Butcher does not appear to have practised this operation upon the living subject. Had he done so, no one who has had any experience in the treatment of these cases can doubt that his patients would be placed in a far more distressing condition than before the operation.

The wonderful degree of perfection attained by the new joint, after complete resection, has long been a matter of surprise, even to the most enthusiastic supporters of the operation. That a highly complex organization, such as a large

joint, should not only be re-formed, but be capable of exercising its functions in a manner scarcely, if at all, inferior to the natural formation, was more than could be understood. While the surgeon regarded the admirable adaptation of nature's process, and reflected with pleasure on the share that his own handiwork had in directing and determining the "vis medicatrix naturæ," he could not explain by what means the result was accomplished—he could only surmise that a species of false joint had occurred. That a structure had formed, so perfect that, except in external shape, it scarcely differed from the natural joint, was not supposed possible; yet such is actually true, as proved by post-mortem examination.—*Liverpool Medico-Chirurgical Journal, July*, 1857, *p.* 201.

55.—ON THE OSTEOTRITE, FOR THE REMOVAL OF CARIOUS BONE.

Of all the various instruments in daily use for the removal of diseased bone, in a carious or necrosed condition, which we have, we may truly say, hundreds of times seen used, none have appeared so ingenious and useful as the osteotrite, recently invented and employed by Mr. Marshall. It consists of a handle similar to that of the common gouge, into which is fixed a steel shaft, terminating in a round, somewhat conical head, which varies in size, but which possesses a series of spiral cutting edges, radiating from two points on the sides of the vertex. Between these two apices are two or three other spirals, which are continued across the head. The grooves between the spiral edges are deep, and about an eighth of an inch apart, the teeth thus formed being turned to the right, and are pretty sharp. The drawing gives a good idea of the instrument, which is about the length of an ordinary gouge, but constructed on the principle of the "millhead" instrument in common use amongst dentists. It might be looked upon as one, on a large scale. There are three sizes of the instrument, made by Coxeter, of Grafton-street, one larger and one smaller than the drawing, which represents the medium size. When the osteotrite is used, as, for instance, on a soft surface of bone, and rotated by a movement of the wrist, it cuts like a saw or rasp, and removes with perfect ease the diseased structure, the sensation communicated to the hand indicating when it is in contact with healthy bone. It can be, moreover, introduced into a cavity without much dilatation of the external wound, and the diseased structure lining its interior removed with facility. As contrasted with some of the ordinary instruments in use, it does not leave any loose splinters behind from the nature of its action; and as it is very strongly made, there is no risk of accidents from breakage or from slipping.

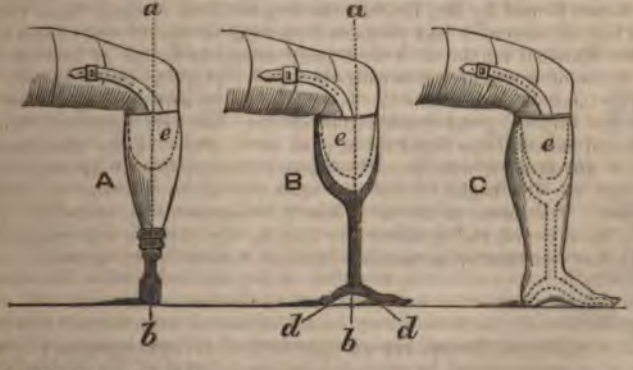
We have seen it used by Mr. Erichsen to remove some diseased bone from the femur of a boy, on whom he had performed excision of the hip-joint some months before. Mr. Marshall employed it with good effects in a case of necrosis of the ribs, and in one of caries of the os calcis in a girl. It is not an uncommon thing to find pretty large cavities in this last-mentioned bone, which we have seen sometimes give the surgeon great trouble to clean out; with the osteotrite, however, all the soft and carious bone is got rid of most effectually. In Mr. Marshall's case, the cavity in the os calcis was cleared of disease through a small external wound; and, upon the rib, the healthy bone was known at once when the diseased part was removed. The same principle guides the dentist in his operation on the teeth. We have heard the inventor say that he can remove the diseased bone from a very large surface by its means.—*Lancet, June* 20, 1857, *p.* 628.

56.—ON A NEW METHOD OF CONSTRUCTING ARTIFICIAL LEGS.

By Kenneth H. Cornish, Esq.

[The following useful remarks on the construction of artificial legs, apply to amputations of the leg, properly so-called; that is, to amputation below the knee-joint.]

In the first place, it will be necessary to avoid one error which has studiously been committed from the earliest times—an error which the inventor of the common "peg-leg" fell into, and which none of his successors have had the sagacity to perceive and obviate. The strangest circumstance connected with this blunder is, that a very superficial study of the mechanical philosophy displayed in the osteology of the lower limb ought to have at once exposed it. I will endeavour to clear the matter up. The line of weight or "force" in the natural limb passes mainly through the tibia on to the foot, upon the arch of which the whole body rests; very little of the weight passes through the fibula—next to none (if any) through the soft parts. Now, the tibia is placed to the front of the leg, rather than the centre, yet we find that in the common wooden leg the peg is placed quite in the centre. A reference to fig. A, as compared with fig. B, will explain my meaning far better than I could convey it verbally. In cork and other fancy-legs, as much of the weight rests on the back part, correspondent to the soft parts, as upon the front, which represents the osseous system—plainly thereby directly contradicting the law of construction followed by nature. The convergence of the lines of force at the ankle-joint is thus completely prevented, and instead of falling upon the key-stone of the arch of the foot, prior to their divergence to the piers, they fall upon piers and key-stone equally and cotemporaneously, destroying all chance of elasticity in the arch. *It is impossible by such a construction to obtain a "centre of motion."* Now, I propose throwing my main support more forwards, so that the position of the pin, in relation to the rest of the apparatus, may coincide with that of the tibia in the normal limb, (*Vide* woodcut B.) Instead of letting the weight pass directly to the ground, I would endeavour to procure a new centre of motion, coincident of course with the line of weight, at a point answerable to the ankle-joint of the sound limb, and would then construct an arched foot, on which the weight of the body should rest, just below this point. The principles on which I should proceed to do this would be analogous to those which I proposed for the construction of my artificial foot for Chopart's operation, with this difference, that here the whole arch of the foot, piers and centre, must be constructed. Luckily, this lessens the difficulty, instead of increasing it, as might at first sight have been expected. It will only be necessary to have a strong metal centre applied to the end of the pin, from which, as from a key-stone, the piers of the arch will diverge—the posterior pier being formed by two very powerful springs, passing backwards to the ground; the anterior by five, arranged as much as possible after the fashion of the metatarsal bones, so as to obtain the lateral as well as the antero-posterior arch. At the part which corresponds with the phalanges, the springs must form a series of wave-like curves, as in the artificial foot already alluded to. I omitted to state, that the sheath of the leg would greatly resemble



A, Old socket-and-pin leg.
B, My leg in the skeleton only.
C, Ditto as finished, the outline of the weight-bearing part being dotted.
a, *b*, Main lines of weight, given correctly in B.
d, *d*, Radii of force proceeding from "centre of motion."
e, Outline of stump.

that of the ordinary socket-and-peg apparatus, the bearing of course being taken from the tuberosities of the tibia, and the end of the stump kept intact from friction or weight.

Thus much for the necessary part of the leg; now for the ornamental All that is necessary is, that the shape of a perfect limb be imitated in pliable leather, stuffed with cotton wool, these representing the soft parts and integuments. (*Vide* drawing C.) The expense of a leg such as I have described would not greatly exceed that of the socket-and-pin leg.

Any person already in possession of the apparatus just mentioned might easily have my alterations added to it. Mr. Bigg, of Leicester-square, will carry out the practical details of this invention, as well as of my artificial foot. I think that the pin might with advantage be formed of "Goodyear's vulcanized indiarubber;" it is strong, light, and elastic.—*Lancet*, *Oct.* 10, 1857, *p.* 360.

57.—*Paper Splints.* By JOHN C. SAVERY, House Surgeon to the Northampton General Infirmary.—I have for the last fifteen months been in the habit of putting our fractured legs up in pasted paper, when the swelling has subsided, which enables our patients to leave their beds at the end of ten days or a fortnight. I do not claim any originality for the idea, which I saw practised in Paris, but as I have not yet observed any notice of it in England, and have found it so very useful, I should be glad if it was more extensively known. The advantages it possesses over the starched bandage, of which it is a modification, are, that sloughing from over-pressure is impossible, as on attempting to pull the paper too tight it tears, and the materials for it are always at hand. My mode of procedure is as follows:—I prepare forty or fifty strips of brown paper, 1¼ inch wide and 16 long; these are all smeared with thick paste, and applied to the limb in the ordinary manner of strapping: three layers are applied, a light bandage over all, and then left to dry, supported by sand-bags; the strips are all pasted before they are put on; in twenty-four hours it forms a very hard, light case, exactly applied to the limb, which affords perfect protection during the reparative process. It must be well soaked before removal.—*Med. Times and Gazette*, *July* 11, 1857, *p.* 45.

58.—ON THE MECHANICAL TREATMENT OF TALIPES VARUS.

By WM. ADAMS, Esq., Assistant Surgeon to the Royal Orthopœdic Hospital.

The mechanical treatment has reference.—1. To the reparative process in the divided tendons: and 2. To the restoration of the form of the foot. With respect to the first point, I would only observe that very erroneous ideas appear to exist. It is generally said that the divided tendons must be allowed to reunite, and then the new connecting material gradually stretched by mechanical means to the requisite length. I believe the theory of stretching the new material formed in the reparation of tendon to be altogether erroneous. The new material does not admit of being stretched like india rubber, and then, unlike this material, of being retained at any required length. The object is not to stretch tissue already formed, but to regulate the length of new material during its formation. This can be accomplished with ease and certainty where no ligamentous resistence exists, as in most of the non-congenital deformities; but where much ligamentous rigidity exists, as in severe cases of congenital varus, it is sometimes impossible to gain the required length before complete re-union of the divided tendon has taken place, and then the acquirement of any additional elongation is so tedious and uncertain, that a re-division of the tendon may be advisable. I have already alluded to this subject in speaking of the mechanical treatment of talipes equinus, and stated that the rate of extension must be regulated by the activity of the reparative process in the divided tendons. In well-nourished infants the required length should be obtained in a fortnight, while in paralytic limbs it should not be obtained in less than from six to eight weeks.

With regard to the second point, viz., the restoration of form by elongation of

the contracted ligaments, it is scarcely necessary to observe that the rate of extension may proceed as fast as the circumstances of the case permit, having regard to the condition of the tendon, the avoidance of pain, and the prevention of abrasion or slough from local pressure.

The Mechanical Treatment of Infantile Varus.—This may be conducted on an extremely simple and efficient plan, if one great practical rule be strictly adhered to, viz., *the division of the treatment, both operative and mechanical, into two stages;* the object of the first stage being to overcome the inversion of the anterior portion of the foot, and thus convert a case of talipes varus into one of equinus; and the object of the second stage being simply to cure the equinus. There is no claim to novelty in this twofold division of the treatment. Scarpa, in his mechanical treatment of this deformity, adopted precisely the same plan. He aimed at curing the severest forms of varus, up to the age of ten or twelve years, and from his excellent description we find that he accurately appreciated the mechanical conditions as I have described them, in reference to the two great centres of motion, viz., the transverse tarsal joint and the ankle-joint; and the different planes in which the anterior and posterior portions of the foot move in the production of this deformity. The treatment of the severe forms of varus has always been conducted upon this principle at the Orthopædic Hospital, but it does not seem to be generally known to the profession. Surgeons usually divide the tendo-Achillis at the first operation, and this, I need hardly say, is at once fatal to the principle of treatment I am now recommending. It may be thought that tenotomy, by at once overcoming the great obstacles to the restoration of the foot, supersedes the necessity of this twofold division of treatment, but, except in the slighter forms of infantile varus, it does not do so; and the explanation of this fact will be found in the adapted shortening of the ligaments in severe cases, upon which I have already laid so much stress.

In slight infantile cases, then, you may divide all the tendons recommended to be divided, viz., the tibialis anticus, tibialis posticus, flexor longus, and tendo-Achillis, at the first operation; and after the foot has been retained in its deformed position by a bandage and splint for three days, you may apply the Scarpa's shoe, and gradually, in the course of two or three weeks, bring the foot into its natural position. *In all severe infantile cases*, or I would say in all those cases in which any ligamentous rigidity appears to exist, I strongly recommend you to divide the treatment into *the two stages above recommended.* In these cases first divide the tendons of the tibialis anticus and posticus, the flexor longus digitorum, and, if necessary, the extensor pollicis muscles; then bandage the foot in the deformed position to a splint, as recommended, and on the third or fourth day, the cutaneous puncture being healed, commence *the first stage of the mechanical treatment*, the object of which is the complete eversion of the anterior part of the foot. The best and simplest method of accomplishing this is by the application of a straight splint along the outer side of the leg, as represented in the accompanying figure. The splint should reach above, nearly to the knee, and inferiorly should extend a little below the foot. The splints we use are made of tinned sheet-iron, well padded. The advantage of this material is that it can be bent a little outwards at the lower end, as the foot is becoming fully everted. First bandage the foot and leg, then apply the splint, and begin to bandage from above downwards, so that a firm lever-power may be established; then pass the bandage round the foot, and draw it towards the lower end of the splint, as shown in the figure. The eversion of the foot must be done gently and very gradually, the apparatus being removed every other day, that undue pressure may be avoided. By this means you will be enabled to overcome the eversion, and draw the foot into a straight line with the leg, in about two or three weeks; in very severe cases a longer time may be required. It is better this stage be delayed too long, than that the second stage be commenced too soon.

When the eversion of the foot is complete, and there is no longer any resistance to be overcome in carrying the foot completely into the equinus position, the second stage of the treatment may be commenced by dividing the tendo-Achillis.

The object of the *second stage of the mechanical treatment* is to flex the foot at the ankle-joint, and in so doing to gain the required amount of elongation of the tendo-Achillis. This object must be accomplished gradually, for the reasons I have already given, and the apparatus best adapted to the purpose is the Scarpa's shoe, or the modification of it I have suggested and delineated. (See "Retrospect," vol. 33, 1856.) This is a most scientific instrument for equinus, but a most unscientific instrument for varus, where any ligamentous rigidity exists, and, as I shall presently show you, was never employed by Scarpa for overcoming the inversion of the foot. The flexion of the foot must be regulated by the cog-wheel placed opposite the ankle-joint; and in about a fortnight the foot may be brought into its natural position, and the required elongation of the tendo-Achillis obtained. At the end of this time, or it may be longer if ligamentous rigidity exists, passive motion may be commenced, and the Scarpa's shoe used simply as a retentive apparatus. I usually direct passive motion—flexion and extension of the ankle-joint—to be continued for a quarter of an hour twice a day. About the end of the fourth or fifth week, if the tendo-Achillis should appear to be strong, the Scarpa's shoe should be worn only at night. In the day-time the child may then wear an ordinary cloth boot with a steel spring, or a very light straight bar attached to the outer side, having a free joint corresponding to the ankle-joint, and connected above with a circular strap round the calf of the leg. A stop-joint is generally recommended at the ankle, but I much prefer free motion, because the exercise is thereby facilitated, and where this is neglected, I doubt whether the stop-joint will prevent re-contraction of the tendo-Achillis. I rely more upon the frequent and regular employment of passive motion than any mechanical aid.

Mechanical Treatment of Congenital Varus after the Period of Walking, and in the Adult.—I have already explained to you that the severity of talipes varus becomes much increased after the period of walking, not only in consequence of the adapted growth of the ligaments, and the persistence of the deviations in the bones, but by the influence of the superincumbent weight in the act of progression, which is transmitted to the ground at first through the outer border of the foot, and subsequently through the exposed anterior articular surface of the os calcis; the exposed portion of the head of the astragalus; the cuboid bone, which is gradually changed in its position, so that its superior surface looks directly downwards; and through the fourth and fifth metatarsal bones. Thus we find with respect to the four movements described as occurring in the production of varus, that only the first two—viz., extension of the foot, and inversion of the anterior portion—constantly exist in infantile cases; whilst, after the period of walking, the third and fourth movements—viz., shortening of the foot, and rotation of the anterior portion—are found to exist in an increasing degree, and are constantly present, as well-marked characters of the adult deformity.

In children from five to ten years of age, a period within which they frequently come under treatment at the Orthopœdic Hospital, the same mechanical means may be employed as in the infant—viz., a straight splint for the first stage, and Scarpa's shoe for the second; and when the ligamentous rigidity is not considerable, the same method may be adopted at a much later period, especially in females; but severe and rigid cases, even in children, are better treated by the apparatus which I shall presently describe as especially adapted for adult cases.

In adult cases, the Scarpa's shoe, as represented in 'Retrospect,' Vol. 33, 1856, is the apparatus generally employed at the Orthopœdic Hospital; and it must be admitted that the most successful results have been attained by the use of this instrument, even in the most severe cases, up to the age of thirty years, or beyond, in some few instances; but in discussing the merits of the apparatus, as judged by its results, the extraordinary amount of attention which these cases receive at the hospital must be borne in mind. The surgeon conducts the whole of the treatment himself, and a very competent "sister" is always at hand to check any indications of undue pressure. Under such circumstances, therefore, it cannot be matter of surprise that good results should follow the application of an ill-adapted instrument. For the very severe cases, a modification of the Scarpa's shoe has been employed by Mr. Tamplin, which consists in the addition of one or two cog-wheels placed above those marked *k* and *l*, corresponding to the ankle joint; and also in carrying the apparatus up to the thigh by

means of a straight trough, without any motion at the knee joint. By these means the power of adaptation and the range of motion in the Scarpa's shoe part of the instrument are increased, and the apparatus is rendered more fixed by the trough, but all the essential errors of the Scarpa's shoe, which I shall presently describe, are retained; and in consequence of the length of time the apparatus has to be constantly worn,—from a year to a year and a half, or perhaps longer,—a state of rigidity of the knee-joint is apt to be induced, which I have known it to take three months to overcome, the gradual flexion of the knee being very painful to the patient.

A very difficult part of the treatment of talipes varus in the adult, and one for which no provision whatever exists in the construction of the Scarpa's shoe, is what is called "unfolding the transverse arch of the foot." According to the anatomical description I have given you of this deformity, this would be more correctly described as "overcoming the rotation of the anterior portion of the foot," by restoring the cuboid bone to its normal relations. I have shown you that in some severe adult specimens, the transverse arch of the foot is not really contracted,—that the fifth metatarsal bone is not abnormally approximated to the metatarsal bone of the great toe,—but that the aspect of the sole of the foot is so far changed, that it looks directly upwards and backwards, in consequence of the cuboid bone, and with it the fourth and fifth metatarsal bones, being carried backwards by the influence of the superincumbent weight in the act of progression; and that the superior surface of the cuboid bone looks directly downwards, and transmits the weight of the body directly to the ground. An appearance of narrowing in the transverse arch of the foot results from this change in the relative position of the tarsal bones and of the phalanges; and externally is added to by a longitudinal fold in the skin, or furrow described in the external appearance of the foot in adult varus.

This so-called "unfolding of the transverse arch of the foot," or, as it may be more correctly called, "the restoration of the cuboid bone and corresponding metatarsal bones, to their normal position," cannot be accomplished by any simple everting power, such as the side-spring of the Scarpa's shoe, or the straight splint which is sometimes used, even in the adult deformity. It has seemed to me that the appearance of narrowing of the transverse arch of the foot is increased after the foot has been everted by the straight splint.

At any rate, it is found in practice that some special apparatus must be employed "to unfold the transverse arch of the foot." Mr. Tamplin uses a contrivance by which an uplifting force is applied to the cuboid and fifth metatarsal bones, and at the same time a depressing force is applied to the inner side of the dorsum; the force is regulated by a screw placed on the inner dorsum of the foot. Mr. Lonsdale uses a very ingenious screw apparatus of his own invention, with a similar object, attached to the sole of the Scarpa's shoe. The necessity for any special apparatus for the above object is, however, superseded by the apparatus which I have invented for the cure of adult varus. By this instrument any amount of uplifting force can be directed against the cuboid bone and the fifth metatarsal bone, at the same time that the foot is being everted.

Relapsed Cases.—[There can be no doubt but that cases of talipes varus in which the deformity has returned, even after well-conducted operations, are numerous in our past experience.]

What are the Causes of this Tendency to Relapse?—In answering this question, especially in reference to severe cases, it appears that we must either assume the existence of an inherent tendency to relapse—an opinion entertained by Dr. Little—or believe that the tendency to relapse essentially depends upon some defect in the primary or after-treatment. I hold the latter doctrine as applicable to all the cases in which the primary treatment can be successfully adopted, *i.e.* in which the deformity can be removed; and the only exceptions, I believe, will be found in those rare cases of arrested muscular development, affecting the anterior and outer muscles of the leg; and even in these, although an inherent tendency to relapse undoubtedly exists, such an event, I believe, may be prevented by a continuance of mechanical means, as in paralytic cases.

The absence of any evidence of disturbed muscular action—any spasmodic affection—after the removal of the deformity, is adduced by some as an argument

against the dynamic origin of varus. But Dr. Little lays great stress upon the tendency to relapse depending in many cases upon a continued disposition to "tonic contraction" in the muscles which produced the deformity, and therefore regards the tendency to relapse as depending upon the continuance of this disposition, and at the same time as evidence of the spasmodic origin of the deformity. He observes, "Now it is obvious that if the dynamic property of the muscles of a joint be intact, and entire flexibility be obtained, either with or without operation, no tendency to relapse should exist; for if the muscles originally contracted be right in their functional activity, ordinary exercise would, as in the case of a sound limb, maintain the flexibility. But although volition exists in the former structurally shortened muscles of a club-foot, a tendency to re-contraction—tonic contraction—does in many cases (especially those most affected) exist." In other cases in which the dynamic cause has subsided, Dr. Little observes that the deformity is little inclined to relapse.

Now, it appears to me that a sufficient explanation of the tendency to relapse, in all but the exceptionable cases previously adverted to, will be found:—1. In the induced conditions of the various tissues involved in this deformity—such as the adapted growth of the bones in the deformed position, more especially the astragalus; and also the adapted growth and relatively altered length of the ligaments; and 2. In the imperfect extent to which these induced conditions are frequently removed in consequence of the great length of time necessary for the complete restoration of these deviations, when severe, leading as it frequently does to the neglect of the after-treatment. Therefore, to me it seems quite unnecessary to suppose the existence of any inherent disposition to relapse, such as a continuing influence of the original producing cause of the deformity. Moreover, there is no evidence of the continuance of any spasmodic tendency, unless the fact that the deformity does sometimes return be so regarded, and to this conclusion I cannot assent.

The principal causes of relapse, then, which I recognise in the ordinary cases of varus, however severe, have reference to some defect either in the primary or the after-treatment, when the case is submitted to treatment at a sufficiently early period; and may be arranged under the following heads:—

1. Defects in the operative treatment, consisting of—(*a*) omitting to divide one or more of the contracted tendons, or more correctly speaking, the tendons of contracted muscles; (*b*) incomplete division of tendons; (*c*) division of the tendons in a wrong order; (*d*) inflammatory adhesions following clumsily performed operations, or some of the accidents, such as aneurisms, &c., which may occasionally occur.

2. Neglect, or discontinuance of the after-treatment, either mechanical or physiological.

Other causes of a tendency to relapse may also be mentioned, and it is certain that this may arise:

3. From the treatment not being commenced at a sufficiently early age.

4. From congenital defects of muscular development, such as absence of the anterior and outer muscles of the leg above described.

It would be tedious and unnecessary to relate the details of relapsed cases from all these various causes. I will therefore merely advert to some of the leading facts connected with them.

1. In reference to the defects in the operative treatment, I have already stated that the posterior tibial tendon was not divided subcutaneously in infants till the year 1842, previous to which it was either performed by open wound, when its division appeared to be absolutely necessary, as its division was altogether omitted. The general opinion was, that the tendo-Achillis and the anterior tibial were the principal tendons requiring division. I believe Stromeyer held this opinion, and it appears to be entertained by some surgeons even at the present day.

The division of the posterior tibial tendon, therefore, was very frequently omitted, and as a consequence of this omission I believe the more severe cases very commonly returned. I base this opinion mainly on the relapsed cases which have come under my own observation in private practice, and upon the well known fact that since the subcutaneous division of this tendon has become the rule of practice in cases even of a moderated degree of severity relapse of the deformity has been of less frequent occurrence.

With regard to the incomplete division of tendons, I have examined two cases after death (from causes not connected with the deformity), in which the posterior tibial tendon had only been cut half through in the operation performed for the cure of the deformity. In one of these cases the operation had been performed by a leading orthopœdic surgeon, and in the other by a distinguished hospital surgeon of this metropolis, and therefore this must be regarded as an accident which may occur even in practised hands. I need hardly say that if it should occur in a severe case, the cure of the deformity must be incomplete, and relapse therefore certain.

With regard to division of the tendons in a wrong order, as a cause of relapse, I would observe that the error most frequently committed is dividing the tendo-Achillis at the beginning instead of at the end of the operative treatment. The effect of this in severe cases is, that sufficient elongation of the tendo-Achillis is not obtained, in consequence of the difficulty of accomplishing by mechanical treatment at the same time all the objects required in the restoration of the deformed foot. The tendo-Achillis, therefore, remains as a shortened, or, as it is called, a contracted tendon, at the end of the treatment, and has a strong tendency to produce relapse of the deformity. I have already insisted upon the necessity of observing a definite order in the division of tendons.

With respect to the influence of "inflammatory adhesions following clumsily performed operations, or some of the accidents, such as aneurism, &c.," acting as a cause of relapse of the deformity, I would observe, that all subcutaneous operations leave behind them slight adhesions between the tendons and their sheaths; but when the operations are carefully performed these adhesions, the inflammatory origin of which may perhaps be doubted, are very few, and extremely slender, so that they do not interfere with the free play of the tendons. The absence of inflammation is the great feature in the pathology of subcutaneous operations; but when from any cause the operations are followed by a perceptible degree of inflammation, adhesions of a stronger and more important character take place. I have told you that I have witnessed suppuration along the tendons, and in case of division of the posterior tibial tendon, suppuration extending up to the popliteal space. I have also seen aneurisms produced by wounds of arteries in these operations. Now, in all these instances, and also when the same tendon has been the subject of repeated operations, close inflammatory adhesions must take place, and by their influence in limiting the free play of the tendons, an influence which is increased by their own inherent disposition to contraction, they become important agents in inducing a reproduction of the deformity. And of this I have witnessed several examples.

2ndly. The cases of relapse arranged in the second class, viz., those arising from "neglect or discontinuance of the after-treatment, either mechanical or physiological," are of the most frequent occurrence. We have laid great stress on the importance of careful attention to the after-treatment, and the necessity of employing such mechanical means as the case may require, as a retentive apparatus, during the time required by the bones and ligaments to adapt themselves to the normal position of the foot; and also the necessity of improving the muscular power by active and passive muscular exercise, shampooing, &c. If, by mechanical means, motion be allowed only in the right direction, and if by the physiological treatment, the moving agents, viz., the muscles, be proportionately improved, a sufficiently perfect state of ligamentous and osseous adaptation, and balanced muscular action, will be obtained, and all chance of a relapse of the deformity prevented; but neglect of any of these means in a case even of a moderate degree of severity will most certainly lead to relapse of the deformity.

A temporary neglect or intermission of the after-treatment may sometimes be unavoidable during illness, and under these circumstances a ready excuse for the relapse is found equally by the parents and by the surgeon; but it appears to me without sufficient reason, except when the child may have been the subject of some very protracted illness. In hospital practice neglect of the after-treatment is a frequent cause of relapse, where poverty, ignorance, and neglect are necessarily common among the class of patients we have to do with; and in private practice, the great length of time during which a continuance of the after-treatment is frequently necessary—perhaps three or four years in severe cases—

renders it matter of little surprise that the parent should weary of this very tedious and troublesome treatment. Moreover, they commonly argue with apparent reason and plausibility, that as muscular weakness appears to be the most prominent condition of the limb, mechanical support must retard and interfere with the increase of muscular strength. In this they are frequently supported by their medical attendant, who says, "the child cannot gain strength so long as it wears the steel supports." Now, this prejudiced and erroneous opinion, which is so frequently urged against the mechanical treatment of curved spine and all other deformities, ought to be at once eradicated from the professional mind. The fact is, that this is not merely a question of muscular strength, but a question of strength and position combined. An increase of muscular strength might, perhaps, be gained in some cases by discontinuing the apparatus, but if irregular muscular action be allowed to remain uncontrolled, the deformity will certainly return; and in cases of congenital varus, diminished instead of increased muscular strength will ultimately result, as a consequence of the wasting of the re-contracted muscles. I have repeatedly known patients, acting under the advice of their medical attendants, discontinue the mechanical supports, and trust to rubbing, sea-bathing, &c., instead of combining all these accessory means of treatment, and a relapse of the deformity has been the necessary and inevitable result. I have a young gentleman from Oxfordshire, eight years of age, now under my care, whose club-foot had been cured, or rather the deformity removed, three times previously at intervals of two years. The relapse appears to have been the result partly of neglect of the mechanical treatment, but principally the omission of the physiological means, which were not directed to be employed by the surgeon under whose care he had previously been placed. After great perseverance I have succeeded in again restoring the foot, and the motion at the ankle-joint and muscular power of the limb are rapidly improving under shampooing and passive exercises. I anticipate complete and permanent success.

3rdly. With regard to the treatment not being commenced at a sufficiently early age, as a cause of relapse, I would observe that the difficulty of curing the deformity—both with respect to the anatomical and physiological condition of the various tissues involved—is always proportionate to the lateness of the period at which the treatment is commenced, because during growth the bones become ossified in the deformed position of the foot, and therefore retain their imperfectly developed forms; the ligaments become adapted to the abnormal conditions of the bones and joints: and the contracted muscles remain imperfectly developed, and also become more or less degenerated from disuse. It must therefore follow that as the cure is necessarily imperfect, a proportionate tendency to relapse exists in the cases operated upon at a late period.

4thly. With regard to the last cause of relapse mentioned, viz., congenital defect of muscular development, such as absence of the anterior and outer muscles of the leg, I have dissected two cases, already described, in which this congenital defect existed, but in neither of them had any operation been performed. A tendency to relapse, however, would certainly have existed, though return of the deformity might probably have been prevented by some form of retentive apparatus which the patient would have been obliged to wear during the remainder of life, as in severe paralytic cases. Fortunately these cases are extremely rare.

The causes of relapse to which I have now directed your attention are, as regards those arranged in the first two classes, entirely within the control of the surgeon and the parents, provided the surgeon has the opportunity of treating the case at a sufficiently early period. And the cause arranged in the third class is also very frequently within the control of the surgeon, because it is generally by his advice that the operation is delayed. The cause arranged in the fourth class being essentially a congenital defect of development, is of course beyond the reach of art, but its influence may be in a great measure controlled.

Treatment of Relapsed Cases.—Having described to you the various causes which produce relapse of the deformity, I need hardly say that treatment will necessarily vary according to the circumstances of the case. Speaking generally, the ultimate results of treatment in such cases are much less favourable than in cases in which treatment is undertaken for the first time. This depends partly upon the *time* lost and the structural changes thereby induced; and partly upon the effects

of previous treatment, especially in reference to the adhesions of the tendons to their sheaths and neighbouring fasciæ, as above described. Such cases are therefore in a less favourable condition for operative treatment, and it is advisable to persevere with mechanical and physiological treatment as long as any advantage can be gained by it, before repeating the operations. In most cases, however, it will be necessary to re-divide one or more of the tendons, and the division of the tendo-Achillis alone is often sufficient. Sometimes the anterior tibial also requires division; and in the majority of cases it is also necessary to divide the plantar fascia. Occasionally the posterior tibial tendon may require division, but much less frequently than the others. I have found this more especially necessary in the cases of relapse after the operations performed previous to the introduction of the subcutaneous division of the posterior tibial tendon in 1842, and in which this tendon had not been divided by open wound; or when the operation had been performed by surgeons little accustomed to treat these cases.

When any marked degree of inversion remains and is accompanied with rigidity of the foot, I have adopted the plan of treating the case throughout as if nothing had been done, dividing all the tendons usually requiring division, and in the order which I have above recommended; and also dividing the treatment into two stages. Such cases of complete return of the deformity are more commonly met with in hospital than in private practice, and depend as much or more upon defective after-treatment as upon any defect in the primary treatment. In private practice, and in cases in which the after-treatment has not been neglected, the relapsed cases generally present the characters of equino-varus with severe contraction of the plantar fascia and structures in the sole of the foot. The heel is raised about an inch from the ground, and the anterior part of the foot inverted, more by the contraction of the inner band of the plantar fascia than by the tibial muscles. In cases originally severe the toes are often remarkably inverted, probably from the flexor longus muscle, the tendon of which had never been divided, remaining too short. The instep is very high and irregular from contraction of the plantar fascia, ligaments, and muscles in the sole of the foot. The foot is consequently very short and ugly. More or less inversion is apparent in walking, and the limited flexion of the ankle-joint produces lameness, and soon causes fatigue in walking exercise. As the patient walks principally upon the outer border and anterior part of the foot he is sure to suffer from troublesome corns in these situations.—*Medical Times and Gazette, July* 18 *and Aug.* 22, 1857, *pp.* 53, 183.

59.—ON UNNECESSARY ORTHOPŒDIC OPERATIONS.

By Dr. W. J. Little, Founder of the Royal Orthopœdic Hospital, &c.

[The object of Dr. Little in these papers is, to point out that in many instances in which the same external deformity exists, different treatment is required: in some, the knife being necessary; in others (and this point is much overlooked) the deformity is better treated without operating.]

Infantile Congenital Talipes Varus, or Ordinary Club-foot. The usual treatment of varus, or common club-foot, consists in section of three tendons, those of the gastrocnemii and of the anterior and posterior tibial muscles, succeeded by mechanical treatment, proportioned in amount and duration to the severity of the case. If the surgeon has not the necessary confidence in his operative skill, he severs the Achillis and anterior tibial tendons only, or perhaps he extends his operative interference to the plantar fascia. Now I desire to show that operation in *every* case of congenital club-foot is neither necessary nor desirable. Possibly many surgeons treat varus without operation, and the attempt to demonstrate the inexpediency of operating in every case may appear a work of supererogation. I know, however, that in London the rule is that of indiscriminate operation. Two of the ablest and most recent writers on the treatment of congenital varus, Mr. W. Adams and Mr. Brodhurst, whilst admitting the possibility of success without operation in very slight cases, strongly discourage the practice.

The objection to instrumental treatment, as opposed to surgical operation added

to instrumental treatment, is the greater length of time said to be required to effect a cure. The answer to the objection is, that in those cases in which tenotomy is not required, the instrumental and manipulative treatment does not involve longer duration of treatment.

It is true, that with the aid of tenotomy, the deformity is more quickly removed, but whether or not operation be performed, professional treatment is equally indispensable in either case, until the child has acquired the art of correctly walking. The removal of the deformity is, strictly speaking, only the preliminary to restoration of the functions of the muscles and articulations; in short, the preliminary to the obtainment of a useful member. The habit of overrating the necessity of tenotomy depreciates the value of instrumental, manipulatory, and physiological treatment. These at least are indispensable in every case.

The objections to *unnecessary* tenotomy are, that during a period that may vary from three to four weeks—i. e., during reunion of the tendons, it is proper to keep the ankle-joint at rest by means of suitable splints or apparatus, no manipulatory movements or passive exercises being permissible, (if any, very slight ones only;) that as a consequence of this immobility of foot in a greater or less bent position, *especially in the rapidly growing infant*, more or less limitation of ankle movement, or stiffness of ankle-joint, with corresponding weakening and wasting of muscles, takes place; and lastly, that as a consequence of the division of the tendon, say the Achillis, and the subsequent facile bending of the foot, the belly of the muscle retracts, so that commonly the fleshy part after "cure" bears a smaller proportion than natural to the tendinous part, the calf being restricted to a higher part of the leg than natural. This excessive length of tendon may often be obviated by extreme caution and slowness in conduct of after-treatment, and by the tendency to re-contraction which the tendon often manifests two or three months, and longer, after operation. But these obviating circumstances destroy the peculiar value of tenotomy.

I am perfectly satisfied from many experimental trials, that where the contraction is slight and curable without operation, a higher development of the muscles of the calf, and consequently a more symmetrical limb, may be obtained by cure without tenotomy than with its assistance. On the other hand, in severer cases, all the conditions—anatomical, pathological, and therapeutic—being different, the contrary obtains. In such cases, a more perfect limb results from the more speedy and effectual relief afforded by the operation.

I have elsewhere mentioned, that if we arrange all cases of congenital varus into three groups, according to the degree of deformity, it will be found that the whole of the third group, which is not the most numerous, and the majority of the second, the most numerous group, absolutely require operation, if we would cure the distortion within any reasonable period; whilst the majority of the first grade, and some of the second, may be cured without operation if the same pains be bestowed upon mechanical treatment and manipulations when the operation has not been resorted to, as are required when the operation has been performed. I again admit that the deformity of the ankle and tarsal joints may be more quickly removed in every case with the aid of operation than without it; but I repeat, that the removal of deformity is not the only object in view, notwithstanding that the rapidity with which this result is often obtainable exercises a brilliant effect upon the bystanders, and creates one of the temptations to unnecessary tenotomy. It will be found, after patient observation and experience of the results of both methods, all things being equal, that of cases curable without operation, those which have been cured without operation present a nearer approach to the anatomico-physiological standard; that in the slighter forms, those in which a rapid and sometimes instantaneous removal of deformity has been effected by operation, the state of the divided muscles and tendons is less satisfactory than when no operation has taken place, the divided tendons (as readily perceived in the calf) often remaining disproportionately long, the muscular belly less developed, and a consequent disposition to excessive walking on the heel (talipes calcaneus) being induced.

My inquiry and practice were more perseveringly led into the direction of mechanical and manipulative treatment of milder cases of infantile congenital varus, by my having been startled by the examination of a well-marked double

varus which had been completely cured, with fewer vestiges of the treatment employed than I had been accustomed to witness after resort to operative measures.

The pith of this paper is contained in the following advice:—When the movement at the ankle is very limited, when the foot can neither be abducted by steady pressure, applied by the hand of the surgeon for a quarter of a minute, nor bent upwards even to a right angle *whilst abduction is maintained;* when, in addition to that amount of contraction, one or more ineffaceable depressed lines on the integuments immediately above the os calcis exist; when the os calcis itself is very imperfectly developed, and seems as if tied to the back of the tibia and fibula by deep ligaments; when a deep constant cleft or cutaneous depression between the great toe and heel, on the inner margin of the foot, which constitutes a characteristic mark of varus, exists, caused by shortening of the plantar tissues generally, the case will not be cured without operation.

When, on the contrary, the foot can be drawn outwardly, and abducted by the hand of the surgeon, and be bent at least to a right angle whilst so abducted, by the use of gentle violence, even if some shrinking and crying be excited, a cure may be effected without tenotomy in a few weeks or months, or before the usual age at which sound children attempt to walk.

[When an operation is necessary, it should not be deferred longer than the second or third month of existence; but if the cure seems practicable by other means, the question of operation may be postponed till the approach of the age for walking.]

In the slightest cases amenable to mechanical treatment the nurse may, by diligent rubbing, manipulating, or placing the feet in an improved position, remove the incurvation, even within the month. In cases somewhat more severe, in which a shortened condition of individual tendons is more apparent, the medical attendant may apply, by means of a roller-bandage, a well-padded tin splint, bent to an angle somewhat less obtuse than that which the deformed foot naturally assumes, altering the angle of the splint from time to time as he finds the foot yield. The foot should first be covered with a few turns of the bandage.

The more decided is the incurvation of the toes the more necessary is it to direct attention to reduction of the varus to equinus (or pointed toe) before attempting to bend the foot.

The secret of success consists in applying the bandage and the splint with sufficent tightness to prevent its being continually displaced by the infant, but sufficiently loose not deeply to indent the limb, excoriate the integuments, or still worse, occasion sloughs upon the projecting heel or malleolus. It should be regarded as an axiom, that it is preferable that the apparatus should be repeatedly removed during the day rather than undue pressure be maintained, and that on no account should it be applied so as to cause crying, restlessness, or other form of suffering. Whenever the apparatus has become disarranged, soiled, or when purposely removed at least thrice in the twenty-four hours, frictions and manipulations should be practised. This part of the treatment may, and should be, conducted quite painlessly to the infant, and be gradually entrusted to an able parent, nurse, or assistant. The more frequently removal and manipulations take place, the less will the child complain of the process. It will be found, as a rule, in orthopœdic practice, that the attempt to move any articulation, after it has been long retained in one position, is painful, and is usually more or less successfully resisted by the child, according to its age.

By mere removal, the attendant may observe how his pains-taking application of the splint has been endured by the limb, what alterations in the mode of application seem desirable, to what extent improvement has rewarded his labours, whilst the infant is indulged in temporary freedom of action of the part.

By frictions, congestion and engorgement are removed, and the temperature of the part equalized. By manipulations, working and stretching of contracted parts, the joint is maintained free from rigidity, no set of muscles is permitted to atrophy from disuse, or to become contracted while another set is being elongated, which is a common consequence of weeks' sojourn unmoved in an apparatus. Above all, the contracted parts are, by manipulations, actually elongated, and the improved limb fitted for a splint more nearly approaching the form of the healthy foot.

I would here lay down another axiom in the treatment of this and many other distortions—viz., that the apparatus should be employed almost less as a means of forcing the lapsed part into a good or a better position, than as a means of preventing its relapse into a bad position after use of manipulations.

Pasteboard, gutta percha, or moulded leather splints, may be used in lieu of those made of tin, but these are preferable. Every surgeon will employ with the greatest advantage that material or apparatus with the use of which he is most familiar. More depends upon his tact and diligence, as well as upon the perseverance of the patient's friends, than upon the apparatus selected.

If the case has not greatly yielded by the age of three months, or if difficulty is experienced in maintaining proper adaptation of the splint, a more elaborate instrument may be resorted to. The simplest, least expensive, and most effective is that modification of Scarpa's original instrument sold by Ferguson, under the designation of "Dr. Little's thumb-screw movement shoe for varus." It is less complicated, lighter than those manufactured with male and female screw, cog-wheel, or ratchet-screw movements, and has the peculiar advantage of not impeding action of the foot in one direction. It consequently permits manipulation of foot in one direction without removal of it. Viewed theoretically, this apparatus seems incapable of the same powers of adjustment to a required angle whilst on the limb as other instruments, but in practice it will be found that it is convenient, on the few occasions on which it is desirable to alter the adjustment, to do it when the apparatus is removed. I may mention that even in adults this thumb-screw movement is preferable in all forms of foot-deformity where the greatest rigidity does not exist, especially when walking exercise may advantageously be permitted. By pursuing the treatment with the help of this instrument, aided by frequent removal, friction, and manipulation, precisely as in the treatment by splints, the practitioner will be surprised and gratified with the result in cases which may not have appeared promising.

In the treatment of infantile varus without operation, as with its assistance, it is, I repeat, of first importance to obtain eversion of point of foot before attempting depression of heel—in short, to convert the varus into equinus. It will be observed that after the condition of equinus has been obtained, and the attendant considers that bending of the foot alone remains to be effected, a constant disposition of the foot to roll over on its external edge manifests itself. In such cases the practitioner should never advance the screw which bends the apparatus, unless he is certain at each stage that he has effectually conquered the varus tendency.

A common complaint of nurses and others is, that they are unable to keep the heel down. This is a certain sign of the apparatus having been advanced in the direction of bending more rapidly than the foot has yielded. It indicates therefore that the apparatus must be put back into a less bent position. The surgeon should continually have present to his mind the axiom, *arte non vi*—gentle compulsion should take the place of force; and on no account should he be tempted or betrayed into the use of such pressure and force as will occasion pain, excoriation, or sloughing, under any form of treatment. In the infancy of modern orthopœdic practice, owing to a prevalent belief that a cure after tenotomy was absolutely required to be effected before the tendons were firmly re-united, the more haste led to the less speed, and such consequences as excoriation, &c., were common; and my ingenuity was much taxed to devise means of pursuing the treatment under such unfavourable circumstances, whilst for many years past, in my own practice, with patients of all ages, I have not once seen so much as an abrasion of cuticle. Nothing is so much calculated to embarrass the treatment, or even defeat it, whether or no the surgeon has resorted to operation, as the occurrence of a wound through undue pressure upon a part, the integrity of which is essential, as the fulcrum upon which all apparatus is called upon to act. Under instrumental treatment, wounds can only arise through ignorance, negligence, and impatience.

If the progress made does not correspond to the pains taken, and the essential characters of the talipes varus are almost as marked as at the outset, or are even more strongly marked, the surgeon must conclude that he has either selected an unsuitable case for instrumental treatment, or that some accident or other cause has neutralized his efforts; and such causes are easily found amongst the difficulties of orthopœdic practice, such as unfavourable health of patient, remissness or

want of skill of nurse or patient, an unwonted leaving off of apparatus either by day or night; and he must therefore, without further delay, if the child is approaching the time for walking, perform the necessary operation, remembering that, as the operation is an important, or in severe cases, an indispensable adjuvant, he will have similar difficulties with the instrumental treatment after operation to those he has encountered before it. The difficulties are nevertheless surmountable by the surgeon who, with proper knowledge of his profession, and the necessary mental qualities, has the requisite time at his disposal.

Treatment of Imperfectly-Cured, Relapsed, or Neglected Cases of Talipes Varus.—[The cases of this nature are numerous, and the subject, if for the sake of orthopœdy alone, is of much importance.]

As a striking instance of the liability of congenital talipes varus to recur, I may relate one which has recently passed from my hands. I operated on the subject of it, a male infant brought from Australia, seventeen years ago. The tendons divided were the Achillis, the anterior tibial, and the posterior tibial. The last of these was divided, not subcutaneously, but by exposure of it. At two and a half years of age the child was returned to Australia, "cured," with the usual directions to the friends and medical adviser as to perseverance in rubbing, working of feet, exercises in drilling as soon as capable of them, and right use of retentive apparatus. At six years of age he reappeared here, the foot entirely relapsed as regards the contraction, and aggravated as regards the form and relations of the bones and ligaments, caused by walking on the deformed member. I repeated the former division of tendons, this time all subcutaneously, the posterior tibial below the site of former operation, and severed likewise the plantar fascia. At eight years of age he again returned to Australia, walking perfectly well, only the foot was more atrophied than at his first dismissal from treatment. As if to illustrate the difficulty of parental and even professional management of such a case, at that period at the antipodes, he again visited me at the age of thirteen, the foot again quite distorted, evidently threatening to be regarded as an inveterate deformity. This time I was not inclined to waste the credit of tenotomy. I had, moreover, ascertained by experience how much may be done with a relapsed case without operation, and was desirous of convincing the friends that the relapse was due to neglect of the cautions I had given, and not to any deficiency in the method of treatment which had been adopted. I advised instrumental, manipulative, and physiological treatment, which was conducted under my directions, the boy being placed at school in the country, and not laid up or confined to the house a single day. The improvement was rapid; the patient has become an unusually tall man and a good cricketer; the gait, when he is not fatigued, is perfect; the only traces of the deformity consist of the ordinary want of beauty in the once varus foot, the elevated situation of the calf, and deficiency of muscular development.

The ordinary causes of similar relapses are—incompleteness of first "cure," through insufficient number of tendons having been divided, or insufficient elongation by instrumental or other treatment of the ligaments and muscles not reached by the operation; premature discontinuance of instrumental and attendant manipulation, as well as gymnastics, or studied exercises of the member.

A formidable pathological cause of return of deformity after treatment conducted with or without operation, is, that while the recently elongated muscles and tendons are, through more or less protracted duration of the deformity, inferiorly organized and grow less than unaffected parts, the bones and muscles upon the originally uncontracted side of the member, having been but slightly, or not at all, implicated in the original cause of the distortion, grow at a greater pace; and thus the mode of progress of the act of nutrition favours a disproportion between the length of some of the muscles and between one portion of the latter and the bones. This natural pathological tendency to relapse requires to be counteracted by the similar course necessary in any disease—viz. by the medical practitioner taking care not to regard a case as "cured" so long as a trace of contraction remains, and by sedulous use of some of the means used for the cure—in this case by active and passive exercises, sometimes by instrumental and retentive appliances.

Cases of this description are continually passing from one practitioner to

another. I have been consulted in many instances in which the blame has often been unjustly thrown upon the operator. I know of such cases having been temptations to unnecessary tenotomy. I have long ceased to re-operate them; I find that they can generally be restored by due pains in mechanical management, by thoroughly explaining to the patient or parent the circumstances which have favoured relapse, or have prevented full realization of the benefits obtainable from the subcutaneous tenotomy of Stromeyer, and by teaching them in what manner manipulations and physiological exercises of the part can best be conducted. In a few exceptional cases, in which a necessary section has been omitted, or no evidence exists of elongation of tendon by former operation, repetition of operation, or completion of it, may be necessary. I mention the fact of the late justly-celebrated Dieffenbach and Phillips having practised numerous repetitions of section of the tendo-Achillis in the same individual, for the purpose of assuring my readers that this is never necessary. Such a course proves that in the earlier stages of the history of tenotomy sufficient attention was not paid by those surgeons to other modes of cure. Even in the severest adult varus, cases requiring more than a year's treatment, I do not remember ever having re-operated more than twice or thrice on the same limb, and even this I now consider excessive.

Whenever retraction of the belly of the muscle is observed, and the tendinous part disproportionately long, although this may be tense and rigid, and the movements of the articulations imperfect, the surgeon may safely determine that the maintenance of deformity is due to shortened ligamentous, muscular, tendinous, and fascial structures, situated beyond the reach of the knife, or to abnormal form of articulating surfaces.

I believe that hundreds, nay, thousands, of cases exist of incompletely cured or relapsed varus, in which the surgeon needs only to direct efficient instrumental, manipulative, and physiological treatment to enable him to realize all the good which subcutaneous tenotomy is capable of affording. I form this opinion from the circumstance that I now have brought to me for consultation a larger number of such cases than of primitive infantile varus.

In the majority of instances, it will be found that the part has only partially relapsed, the heel and the inner margin of the foot being more or less elevated, a portion of the sole being applied to the ground. In the treatment, discontinuance of the use of the limb is rarely necessary; sometimes it is required during two or three weeks, until the principal part of the elevation of the inner margin of the foot is removed. The "bringing down the heel," as it is termed, is much facilitated by exercise upon the limb whilst it is held in an everted position by a proper instrument. In such a case, the use of an apparatus which does not absolutely confine the ankle-joint is a matter of prime importance.—*Lancet, July* 11, *Aug.* 8 *and* 15, 1857, *pp.* 28, 133, 162.

ORGANS OF CIRCULATION.

60.—CASE OF SUBCLAVIAN ANEURISM, CURED BY DISPLACING A PORTION OF ITS FIBRINOUS CONTENTS.

By Robert Little, Esq., Lifford.

[Compression, unfortunately, is not practicable in cases of aneurism of the subclavian and innominata arteries—and tying these arteries, whether above or below the tumour, is neither desirable nor justifiable. Mr. Fergusson's mode of treatment, however, holds out brighter prospects.]

He has proposed that a portion of the fibrinous contents of the sac should be displaced, and directed towards the axillary and brachial, so as to obstruct the distal end of the artery, and thereby arrest the current through the aneurism; and a case so treated by him has been alluded to in the "Lancet" for September, 1855. A similar one having occurred in my practice, I shall offer no apology for bringing it before the notice of the profession, conceiving it to be a case of great practical interest and importance, and that it is the duty of all, so far as in their power, to contribute their mite towards the elucidation or establishment of a novel mode of

treatment, especially when applicable to a class of cases hitherto almost regarded as beyond the pale of surgery.

Daniel McMonagle, an albino, aged 53, admitted into the County Donegal Infirmary on the 6th October, 1855, with an aneurism of the right subclavian artery, gives the following history of his case:—States that, having been in the habit of dealing in eggs and fish, which he usually carried through the country in a basket suspended on his back by means of straw ropes through which he passed his arms, he first felt pain in the right arm in the preceding month of March, which gradually became so severe that in the month of May he was frequently obliged to sit down on the road-side and remove his burden for a time. Soon afterwards he discovered a tumour above the right clavicle, directly corresponding to the site on which one of the ropes pressed, which also became painful after a short time; and in the beginning of July he perceived "a beating in the lump," which then began to enlarge rapidly. In the month of August he says he had such a feeling of drowsiness that for a fortnight he slept the greater part of each day and night, during which time he lost his appetite and took nothing but milk, and at this time he was unable to bend his fingers. Sleep then suddenly deserted him, and he declares that for a fortnight prior to his admission into the Infirmary he did not sleep for a single hour, owing to the intensity of the pain in the tumour and along the arm.

Symptoms on Admission.—A tumour equal in size to the largest goose egg occupies nearly the entire of the supra-clavicular region, extending from the clavicular attachment of the sterno-cleido-mastoid to the acromial end of clavicle, which has a strong pulsatory movement that is visible from the most remote part of the ward, and is accompanied with a loud bruit de soufflet; it is soft and compressible, and is red and somewhat inflamed on the surface, from which circumstance Dr. Greer, under whose notice the patient first came, greatly feared the aneurism would have burst. There is no appreciable dulness on percussion under right clavicle, but the respiratory murmur is not as distinct as on the opposite side; however, this may arise from its being somewhat masked by the loud bruit on that side; the superficial veins of head and neck are considerably enlarged, but he does not suffer either from cough, dyspnœa, or dysphagia; tongue tolerably clean, pulse at wrist 80, and regular; appetite not good. His chief source of complaint is a severe and constant pain extending from the tumour down the right arm as far as the tips of the fingers, which he says is most acute about the middle of the humerus, and he is constantly compressing this part with the other hand, conceiving that it gives him some relief. At first he got sedatives, had cold applied to the aneurism, and each night had a full anodyne, which treatment somewhat moderated the violence of the pulsation, and made him feel more comfortable, and after a few nights, when the anodyne had been considerably increased, he got some tranquil rest.

In December he was bled twice from the arm, and ice was kept constantly applied over the tumour for three weeks, without any manifest improvement, except that the redness and inflammatory appearance of the integument covering the aneurism have completely disappeared; in other respects, the symptoms remain unaltered. Having seen the report of Mr. Fergusson's very interesting case, I resolved to follow his suggestion in this apparently hopeless one, and I must confess I did so without any very sanguine expectation of success. Accordingly, on the 1st of January, 1856, by making gentle but steady pressure with my thumbs alternately over the aneurismal sac, I succeeded in displacing some of the coagula, and directing them towards the distal end of the artery. No other local treatment was adopted, but he was ordered the persesquinitrate of iron internally. For the first two days no change was perceptible in either the tumour or the arm; but on the third day the pulse at the wrist was manifestly weaker, and the arm somewhat colder than the opposite one. These symptoms gradually increased up to the tenth day after the manipulation of the sac, when no pulsation could be felt in either radial, brachial, or axillary arteries. The tumour itself had now become more solid, and the bruit and pulsation were both diminished; the violent pain in the tumour and along the arm has also decreased, but now he complains of a sensation of coldness over the right shoulder and scapula, and of a severe pain extending along the side of the neck and back of the head, which increased in severity

for a month, and the arm became greatly wasted, and partially paralyzed, retaining very little sensation and scarcely any power of motion.

March. All pulsation in the aneurism having now ceased to be visible, pressure was applied over it.

November. Both bruit and pulsation have completely disappeared; the aneurism is not more than one third its original size, and is quite solid: the anterior edge of the clavicle feels thin and sharp, from the absorption of its upper surface, caused by the pressure of the sac, and the pain along side of head and neck heretofore so much complained of has completely subsided. The arm has regained its natural temperature, and, although still considerably attenuated, he can use it tolerably well, sensation having also returned to it. A very slight pulsatory wave can now be felt in the radial artery, but not in either brachial or axillary. Two superficial arterial branches, of considerable magnitude, can also be traced, running in a transverse direction across the remains of the aneurism, one immediately above the clavicle, the other somewhat higher up.

March, 1857. Having again admitted the patient into the Infirmary within the last few days, for the purpose of examining his condition, the absorption of the tumour is steadily progressing, being now not larger than a walnut. Pulse at the wrist somewhat stronger than at last report, but still not to be felt in either brachial or axillary. Sensation and motion are completely restored to the arm. He is free from all pain, and says he feels perfectly well, and intends resuming his former occupation. I may mention that most of my medical brethren in this locality have taken a deep interest in this case, have visited him from time to time while under treatment, have also seen him since his last visit to the Infirmary, and agree with me in considering the cure to be most satisfactory and complete.

It may be objected to this mode of treatment that it is of too dangerous a nature to admit of general application; still it is scarcely possible to conceive a more unpromising case than this was, the aneurism being of considerable size, soft, and compressible, and so much inflamed on the surface that the medical gentleman who sent the patient to me was apprehensive of its bursting; still here we have had a satisfactory and unexpected result; and should subsequent observation and experience prove that this is not an isolated and exceptional case, it not only points out to us a mode of treatment applicable to those cases of aneurism where the ligature and compression are alike unavailing, but also seems to suggest the possibility of curing some cases of internal aneurism under favourable circumstances; and a hope may justly be entertained that the day is not far distant when curative measures may confidently be had recourse to in a class of cases hitherto regarded as hopeless and irremediable.—*Medical Times and Gazette, May* 23, 1857, *p.* 508.

61.—*On the Treatment of Nævi.* By J. Cooper Forster, M.B. Lond., Assistant-Surgeon to Guy's Hospital.—A case of nævus, of the mixed variety, about the size of a fourpenny-piece, was sent to me by my friend Mr. Roper of Shoreditch. I adopted the plan for its cure which I am in the habit of doing for small nævi, viz. passing two pins at right angles to each other under the mass, and placing one ligature around the whole, tying it tightly, and withdrawing the pins. In the course of four or five days, the nævus having shrivelled up with the thread, drops off, leaving an open sore to granulate, which it does rapidly or not, according to the condition of the patient, and an unsightly scar is necessarily the result. In the case to which I allude, the ligature came off accidentally four hours after it had been applied, and I feared that, probably, the usual result would not be attained, but was agreeably surprised to find that the nævus which had been tied dried up, and formed a shrivelled mass, under which the curative process went on without any suppuration: and when the whole dropped off, which it did in the course of twelve days, there was scarcely any scar to be seen. In consequence of the success of this treatment, I have been induced to adopt it several times since, in each case with the same result. I simply pass the pins at right angles to each other under the nævus, tie the whole in a bow knot, remove the pins immediately, and at the end of four hours untie the ligature. A scab forms,

which drops off at the end of fourteen days or so, without any suppuration, open sore, or untoward result occurring.

The rationale of the treatment appears to me to be, that the vessels compressed by the ligature have the current of blood in them arrested for a time, but not sufficient to so entirely obliterate them as to cause the part encircled to slough at once. By this means entire destruction of the nævus is prevented, but sufficient obstruction is caused to allow the blood in the tissue to become consolidated; and the whole becomes atrophied and drops off, leaving scarcely any scar. When this plan can be adopted, I believe it will be found eminently superior to any other for the kind, form, and size of nævus I have mentioned; it is only a modification of the ligature, which I most unhesitatingly affirm to be the only plan of treatment to be adopted with any certainty of success, when the skin and areolar tissue are involved, when, indeed, we have what I am in the habit of describing as the mixed variety of nævus. In the subcutaneous form the injection with perchloride of iron produces, as I mentioned some years since, the most striking and salutary effect, and is applicable where no other kind of treatment can be adopted, owing to the locality of the disease; but it is only in a few cases, comparatively, that it should be used.—*Med. Times and Gazette, June* 13, 1857, *p.* 592.

62.—*On Superficial Aneurisms and their Treatment.* By M. Paul Broca.—M. Thiery imagined that he could obliterate varices by applying on the skin previously denuded by a blister, perchloride of iron. This application excites an inflammation that is propagated to the enlarged veins, in which it often determines the formation of clots; but this obliteration is only transient, and the veins become permeable again after some days. M. Broca was aware of this fact; but furthermore knowing that arterial obliterations were more permanent than those of veins, he thought that the endermic method, inefficacious as regards varices, might furnish a better result in the treatment of those very superficial aneurisms of the scalp and frontal region. He was not mistaken in his expectation, for by one application of the perchloride on the denuded dermis he rendered definitively solid a circoid aneurism of the scalp, that had already existed four months, and was making alarming progress. On the fifth day the tumour was obliterated, and the patient, who was seen seven months after, continued perfectly cured. M. Boca adds, that he has cured in this manner several cases of those congenital nævi known vulgarly under the name of *wine spots*, and which, it is well known, are refractory to all modes of treatment. The proceeding consists in removing the epiderm by a blister, and then touching the denuded derm with a pencil of charpie, wetted with perchloride of iron, at 30° of the areometer of Beaume.—*Med. Times and Gazette, July* 18, 1857, *p.* 69.

63.—*Ligature of Varicose Veins in a Pregnant Woman.*—It is not a usual circumstance, as every accoucheur is aware, to perform any operation, even the slightest, on a pregnant woman; but, in the present instance, it was really necessary, as the patient, in University College Hospital, some months advanced in pregnancy, had varicose veins of the right leg, and a large varicose vein, which was almost constantly bleeding, so much as really to prove a source of great danger to life. It became a matter of some moment, therefore, to arrest this bleeding; and it was accomplished by Mr. Erichsen in the usual manner he is in the habit of employing of ligaturing veins—namely, placing pins under the veins, and tying them over a piece of gum-elastic bougie. We learnt that this procedure was quite effectual, without any bad consequence to the poor woman.—*Lancet, Aug.* 15, 1857, *p.* 169.

ORGANS OF RESPIRATION.

64.—TRACHEOTOMY FOR THE REMOVAL OF FOREIGN BODIES FROM THE AIR-PASSAGES.

By J. Cooper Forster, Esq., Assistant Surgeon to Guy's Hospital.

[Three interesting cases are related of foreign bodies in the air tubes. In two, the operation resorted to of opening the trachea was perfectly successful: in the third, death took place from great loss of blood. The patient in most cases prefers to lie on the right side, as the foreign body is generally in the right bronchus. In none of these cases was chloroform administered, but Mr. Forster would not hesitate to exhibit it another time, especially in a restless child. Dr. Snow has administered it in a few cases. Mr. Forster says]

It is generally recommended that the trachea should not be opened until all external hemorrhage has been commanded and ceased, the propriety of which rule as regards a bleeding artery no one can doubt: but where the hemorrhage is altogether venous, as it usually is in these cases, the most advisable plan appears to me to be to relieve as quickly as possible the embarrassed circulation, and thus allow the blood to return to the heart, which, from the struggling of the patient and his violent straining, has necessarily been prevented. I therefore do not hesitate one minute longer than possible in passing a knife into the trachea, and opening it; as, directly the opening is made, and respiration has become established by the wound, the veins return the blood to the right side of the heart and the hemorrhage ceases.

I did not in any of these cases adopt the plan lately recommended by Mr. Chassaignac of fixing the trachea with a grooved hook (which is passed through the integuments into it below the cricoid cartilage, and brought out at once with the handle resting on the chin of the patient, so that the necessary incisions may be made through the soft parts of the trachea on the groove,) as I should consider it a somewhat embarrassing plen, though not having used the instrument, I can but give a theoretical objection to it. But it appears to me there must be a great amount of difficulty to the operator from the restlessness of the patient, before the trachea is sufficiently opened to allow the expulsion of the foreign body, and yet that tube is, if I may use the expression, tapped by the hook. Any one who has performed tracheotomy must be well aware of the distress and suffocating symptoms occasioned for the first few minutes after the trachea is pierced, and before the opening is sufficiently enlarged.

On the other hand, the plan of lifting up a piece of the trachea like a flap with a common tenaculum, after the tube has been laid bare, and then allowing the foreign body to be expelled, and dropping the flap down again into its original position, is very advantageous. A case occurred in the hospital under Mr. Hilton's care, three years ago, and which is reported in the "Medical Times and Gazette" of August 5th, 1854, where this ingenious plan was adopted, and the happiest result attained. The foreign body here was known to be an ovoid glass bead, which from its shape and structure there was very little prospect of being able to seize with a pair of forceps; it could only have been ejected by the patient during a fit of coughing through the opening, and hence the advisability of the proceeding in this case and others of a like nature.—*Guy's Hospital Reports, Vol. III.*, 1857, *p.* 128.

ALIMENTARY CANAL.

65.—*Influence of Coffee in the Reduction of Hernia.*—M. Triger relates the case of a patient suffering under strangulated inguinal hernia, for which the taxis and ice had been employed in vain, and the operation seemed to offer the only chance. An old practitioner, Dr. Durand, from Havannah, however, ordered the man to take every quarter of an hour a cup of hot coffee, without milk, and with little sugar (60 drachms for 12 cups). After the fifth cup, gurgling was heard;

and at the ninth, the hernia returned of itself. No application was made to the tumour, but the patient dipped his hands for a while in iced water,—a kind of *horripilation* resulting. Dr. Durand has repeatedly succeeded by this means, sometimes also applying a compress dipped in sulphuric ether to the tumour.—*Gaz. des Hôp.—Med. Times and Gazette, May* 16, 1857, *p.* 493.

66.—ON THE TREATMENT OF INTERNAL HEMORRHOIDS.

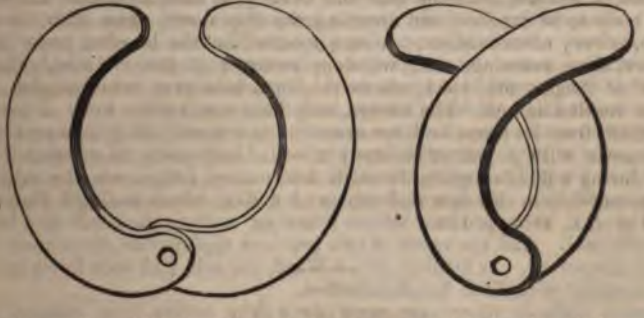
By J. Hamilton, Esq., Surgeon to the Richmond Hospital, Dublin.

In France some surgeons prefer to destroy the hemorrhoids by caustics, and different instruments are used by them for the purpose. M. le Dr. Alphonse Amussat effects the application of the caustic of Filhos to the root of the hemorrhoid by a very ingenious forceps, the invention of his father, or one with a modification of his own.

The transverse arms of the branches of the forceps, which seize the pile at its base, have grooves in them that hold the caustic, which previously to the application is covered by a slide. When the pile is firmly compressed by the forceps and kept so by it, the slides are rotated back, and the uncovered caustic comes in contact with the sides of the base of the tumour. The application is continued from two to four minutes, and during this time constant irrigation of the part with cold water is kept up by an assistant, and is continued afterwards, to wash away any of the particles of caustic that might remain: or this is more effectually accomplished by acidulating the water with a little vinegar. To those, however, who do not possess this ingeniously contrived forceps, a simple mode of proceeding is recommended, viz.:—to seize the hemorrhoidal tumour with the ordinary dressing or dissecting forceps, and cauterize it directly by applying to its centre a stick of Filhos' caustic pointed, and giving it a rotatory movement to penetrate the hemorrhoid, so as to destroy it both centrally and laterally. The neighbouring parts should be protected with spatulæ, and the whole washed with acidulated water after the operation.

If you apply the caustic directly, you need not trouble yourselves to make Filhos' caustic, or the Vienna paste, as a stick of the common caustic potash is quite as good. A very simple but ingenious means for its safe application is this instrument, invented by M. Jobert de Lamballe.

This method of destroying prolapsing or bleeding hemorrhoids, by destructive caustics, ought to be safe and effectual. I have had little experience of it, but M. Amussat brings strong evidence in its favour.



A liquid caustic, which destroys much more superficially, the nitric acid, is a great favourite with many surgeons in Dublin, and some in London. Mr. Cusack, was, I believe, the first to use it; but the late Mr. Houston has the merit of having called particular attention to it, by the publication of a number of favourable cases in the "Dublin Medical Journal." Though successful in many instances, and even in very severe ones, yet I do not place much reliance on it in the majority of cases of aggravated internal hemorrhoids, the relief being often only

temporary, and when much is attempted by a very free application of the strong acid, the effects are by no means so trifling as have been generally described—considerable inflammation of the lower end of the rectum and anus with œdematous swelling around the latter—hemorrhage, from the acid causing a slough over a vein or artery—and severe pain, for many days after the application, of the surface burnt by the acid. The last effect was very troublesome in a case I saw with Dr. Brady, of Harcourt-street; the operation was effectual in a very aggravated case of prolapsing and bleeding piles, but the sufferings of the patient, from the raw surface left after the separation of some superficial sloughs, were extremely severe; from this raw surface also there may be more or less hemorrhage.

Mr. W., fifty-three years of age, three years ago had the nitric acid applied for prolapsus and bleeding piles; the bleeding to such an extent that he was quite bleached. It required two applications of the acid. After this he continued well till some time since, when the bowel again came down at stool, or even when he walked a short distance; a roll of mucous membrane prolapsing on the left side, the size of the first joint of the thumb; it was red and excoriated on the surface, and at the most superficial edge, under the thin integument, large veins were very apparent. At stool the descent is much greater, two large livid tumours appear raw on the surface and readily bleeding. He was in perfect health, but the annoyance of the prolapsus was very considerable.

May 6. As it was clear that a light application of the nitric acid would effect little in such a case, I applied it freely over all the surfaces till they were charred greyish-white; it gave pain where the surface was excoriated.

7th. Some uneasiness about the lower part of the abdomen, and more flatus than usual. He had a motion, which relieved him; and no prolapsus of the bowel took place. Two gentle purgative pills.

8th. Bowels moderately affected; scarcely any bowel came down, and it went up of itself; but there was a good deal of blood.

9th. Much irritation; the bowels twice moved, with pain, uneasiness, and sickishness of stomach; he had eaten too full a dinner, and walked about; I recommended rest on the sofa, low diet, and a pill of five grains of Dover's powder at bed-time.

10th. Passed a good night; had a natural motion this morning without uneasiness or prolapsus; there was some blood, but as it was coagulated, it had most likely flowed into the rectum after the previous motion. He was so well that I took my leave. He went to the country, and six days after I received a letter from him, saying,—"I arrived here the 12th, and have been every day since bleeding very much each time I go to stool, and pass very little through my bowels; I should say I lose on an average half a pint of blood daily, and nearly fainted twice one day, in consequence. Otherwise, matters are well." I wrote to him, recommending the daily use of a lavement of cold water with a teaspoonful of powdered alum in it, expressing my belief that the bleeding came from the abraded surface caused by the severe application of the nitric acid, and that it would most likely cease in a day or two. I got a letter a few days after, saying that the bleeding had gradually ceased, and that he was quite well.

About two months after, he came to town; there was still a little prolapsus on exercising—an oblong excoriated firm portion. He was obliged to leave town the same day, so I could not apply the nitric acid a second time, which would probably have cured this. As it was, here was a case in which the acid had been so strongly applied as to produce serious bleeding, and yet the result was not completely effectual. And the result of two previous applications, three years before, had been temporary. In Dunbar, No. 5 Ward, the acid had been freely applied in another hospital with little beneficial effect.

A Roman Catholic clergyman, aged about fifty, suffers from internal hemorrhoids, which come down at stool, and occasionally bleed; but what most inconveniences him is, that there is some prolapsus when he walks.

I found the anus lax, and a small red granular pile, like an elongated raspberry, projecting out through the anus; besides this, he says that after having walked some time, one from higher up, and of a dark colour, like a grape, comes down too.

He has laboured under this complaint for fifteen years, and been cured twice, for a time, by the application of nitric acid. The acid had been applied by a most

experienced and excellent surgeon, and yet the effect had only been temporary.

But where the prolapsus and bleeding hemorrhoids are small, the nitric acid is a very safe and effectual remedy. There is a glass brush recommended for applying the acid. But you will find the common mode of application as good as any. A flat piece of wood, the size of a spatula, but a little narrower at the end, is to be wet with the strong acid and applied decidedly over the pile till its surface becomes greyish-white; a little oil is afterwards smeared over the part to prevent any free acid affecting the neighbouring parts. The chief things to be attended to are, not to take up too much acid with the stick, lest it drop over other parts, and secondly, to apply it effectually. Some inflammation, heat, and throbbing follow the application, and after the second day, there is often blood in the stools. This, in favourable cases, gradually disappears as the ulcer formed by the acid heals, and the inflammation having consolidated the walls of the rectum, the internal piles cease to come down.

Now let me remind you, that all these cauterizing agents have been proposed as safer modes of curing prolapsing and bleeding piles, than the two older operations of excision and the ligature. That they are safer than excision, there can be little doubt; indeed I wonder any one can be found bold enough to cut off internal piles, when we have the evidence of so many lives sacrificed by it. Dupuytren, an advocate for excision, was yet so aware of the danger of hemorrhage, that he always left an assistant at the bed-side, to apply the actual cautery to the bleeding vessel in case it came on—rather a terrible addition to any operation. Sir A. Cooper lost some patients by this operation, and abandoned it in consequence.

Sir P. Crampton mentioned to me, that early in life he had nearly lost a lady from hemorrhage, after excision. As he could not get at the bleeding vessel to tie it, he had to keep his finger, and after he was tired, that of an assistant, on the vessel, up the anus for several hours.

The following case conveys a good warning of the extreme danger of this operation:—I was asked to see, in all haste, a man who was bleeding after having been operated on for piles by excision. He had suffered for a long time from internal piles which came down at stool and bled freely. One of these piles had been cut off an hour before, and as the young man who was staying with him observed him to pass large quantities of blood in the *pot de chambre*, and to be getting very weak, he became alarmed, and the gentleman who had operated not being procurable, he had sent for me. I found the man blanched, and so weak that when I told him to get on the pot, and strain, he was barely able to do so. He passed about half a pint of nearly pure blood, partly clots and partly fluid; the bowel did not come down, therefore the vessel from which all this blood was coming, was not visible. I introduced a gorget to enable me to find it, when it appeared high up above the internal sphincter, and was pouring out red blood per saltum, forcibly, running up into the bowel and out at the anus. This view was obtained with great difficulty, from his unsteadiness and being inclined to fall forwards from weakness, and the rapid flow of blood obscuring every thing; indeed I never saw more furious bleeding from so small a source, and I am sure in another quarter of an hour, he would have been dead. I took up the vessel with a tenaculum, and luckily the looseness of the parts allowed it to be dragged down, so that a ligature could be properly applied to it. The hemorrhage was stopped, and with the exception of palpitation of the heart, he got well without any bad symptoms.—*Dublin Hospital Gazette, Sept.* 15, 1857, *p.* 273.

ORGANS OF URINE AND GENERATION.

67.—ON THE REMEDY OF STRICTURE BY EXTERNAL INCISION.

By James Syme, Esq., Professor of Clinical Surgery in the University of Edinburgh.

[It is now established that external incision is the proper remedy for cases of stricture which prove incurable by dilatation. But there are some points which require

time and extensive observation for their complete elucidation; with respect to which the following observations are made by Mr. Syme.]

One of these is the question as to the permanency of relief afforded by incision, which could not be satisfactorily answered at an early period of this procedure. The first case in which I divided a stricture at the bulb, was the most obstinate and distressing that has ever fallen under my observation. It had existed twenty years, and resisted all the then known means of remedy, until the patient, wasted to a shadow, longed for death as the only termination of his sufferings. But this gentleman has now, for fifteen years, enjoyed the most exuberant health, and never required the introduction of a bougie. Other cases, of an equally encouraging character, originally led me to believe that the operation would always prove equally effectual, so as to render unnecessary any further treatment; and when, contrary to my expectation, relapses afterwards occasionally occurred, I attributed them to some imperfection in the process, either as to the performance or the subsequent management. The bad results of cutting without a guide, although most unfairly attributed to my procedure, had, of course, no bearing on the question; but I thought that, even when the operation was performed upon proper principles, its effect might vary with the extent of incision through the urethra, the mode of healing, by adhesion or granulation, and the care that was taken to maintain dilatation during the period of recovery. Without going into the details of many trials and observations that were made to ascertain the truth of these surmises, I may state, as their general result, my persuasion, that while the free division of a stricture may afford not only complete but permanent relief, without the employment of bougies subsequent to recovery, it is not possible, by any modification of the process or treatment, to insure against all tendency to future contraction. On the other hand, it has been satisfactorily ascertained that the simple precaution of passing a full-sized instrument occasionally, as once in two or three months, will effectually prevent any risk of relapse; and as, when the canal is free from obstruction, the patient may readily do this for himself without the slightest difficulty or danger, the permanency of relief may thus be secured at the expense of very little inconvenience.

Many people have been deterred from adopting my proposal by the theoretical objection, that a wound of the urethra, like one of the skin, must heal either by adhesion or granulation, so as, in the former case, to restore the old contraction, and, in the latter, to form another of perhaps greater firmness by the resulting cicatrix. But, next to statistics, analogy is the most misleading guide to good surgical practice, and, in the words of an old writer, "one grain of fat is worth a pound of reasoning," as is well known in regard to the question at present under consideration. For no one can now deny, that the most tightly contracted urethra has remained perfectly patent after division of the stricture, so as to permit the exit of urine and introduction of instruments with the utmost freedom. It has also been found, on examining the bodies of persons who have died several years after the operation, that the canal, so far from being contracted at the part where the disease had existed, was actually wider than natural, and, in respect to the surface or texture of its lining membrane, not distinguishable from the neighbouring portion which had been free from derangement. But the most satisfactory information on this part of the subject may be derived from those cases in which the stricture is seated at the very orifice of the urethra, where the effects of division admit of being ascertained beyond the possibility of doubt by actual inspection.

A. B., aged 34, an engineer in Demerara, had suffered from stricture of the urethra for seven years, and, latterly, so severely, as to leave his employment and return in quest of relief to this country, where, for twelve months, it had been attempted by dilatation and caustic, which, so far from alleviating, aggravated the symptoms. He applied to me, a few weeks ago, with hardly any hope of recovery. I found the penis swelled and deformed by abscesses and fistulous openings, of which one was midway between the glans and scrotum, and several were in the glans itself, which allowed the urine to escape as if from a watering-pan. The stricture was seated at the orifice of the urethra, where it formed a dense ring, presenting a small round orifice, which admitted bougies of only the second or third smallest size, and grasped them tightly when withdrawn. From previous

acquaintance with similar cases, I knew that a free division of the contracted part would, in all probability, prove an effectual remedy, and therefore accomplished this without delay, by inserting a small bistoury into the canal, and bringing out its point beyond the stricture, on its lower side, near the frænum. Instruments of the largest size could then be introduced without any difficulty, and the only treatment consisted in placing a piece of lint between the cut edges. Three days after this was done the patient came to the hospital, declaring that "he felt quite a new man," with the organ nearly natural in regard to form and texture, and all his water passing by the natural channel. Before the end of a week, the wound had healed completely, so that it discharged neither blood nor matter, and, in respect to shape as well as surface, could not be distinguished from the natural orifice of a urethra. In another week, he felt so well as to sail for the West Indies.

Now, this case, in the first place, illustrates the unyielding disposition of some strictures to dilatation, since there can be no doubt that, if the contraction, instead of being at the orifice, had existed further back, it would equally have resisted all attempts to remedy it by such means, while their failure might have been attributed to unskilfulness of the operator, which could hardly be supposed when the disease was within view. But the speedy healing of the wound, without either adhesion or contracting cicatrization, affords a still more useful lesson, by showing how the space obtained through incision may remain undiminished, and thus completely answering the argument against division, which has been founded upon the assumed analogy between skin and mucous membrane in respect to the reparation of their wounds.

In originally proposing this method of treating obstinate strictures, I expressed the opinion, that as it could be conducted so as to prevent either hemorrhage or extravasation of urine, the results of its employment would prove free from danger; and a very large experience now enables me to maintain this persuasion. It is true, that death may occur to the extent of one per cent. or so, just as from any other operative interference, on account of some peculiarly unfavourable condition of the patient; but if the process is conducted in strict accordance with the principles which I have explained, it will be found one of the safest in surgery.

In illustration of the facility with which strictures of the oldest standing are remediable by external incision, I may mention the case of J. B., aged 56, who was admitted into the hospital on the first of January last. He stated that, upwards of forty years ago, when serving as a drummer boy in Spain, under the Duke of Wellington, he contracted a gonorrhœa, which was followed by stricture of the passage and progressive annoyance ever since that time. About twenty years ago, being again in Spain as a soldier of the "Legion," he suffered from complete retention of urine, for the relief of which both French and Spanish surgeons endeavoured, without success, to introduce instruments. Suppuration in the perinæum then took place, and led to a fistulous opening, through which his water escaped with increasing freedom, until little of it passed through the natural channel. In this state, his life having become very uncomfortable, he applied to me. At the second or third attempt, I succeeded in passing a small bougie into the bladder, so as to make way for the grooved director, upon which I divided the stricture upon the 7th of January. On the 9th, the catheter was removed. On the 13th, the urine passed in equal portions by the wound and by the urethra. On the 28th, it had entirely resumed its proper course, and the patient felt completely free from his complaint of forty-two years' duration.—*Edinburgh Med. Journal, July*, 1857, *p.* 1.

68.—MR. MARSHALL'S STAFF IN SYME'S OPERATION FOR STRICTURE.

As this instrument may not have fallen under the notice of many of our readers, and as it appears to combine many indications, and greatly to facilitate the performance of the operation, we propose shortly to explain the invention, and its

supposed advantages over the staff in common use—that of Syme. The latter is, as our readers are aware, a solid cylindrical grooved staff, with a shoulder, the groove reaching from the extremity of the staff a very short distance on to the shoulder. Mr. Marshall's instrument consists of a staff of a peculiar form, in two pieces, which are united by a screw. The shaft, instead of being cylindrical, is flattened on its posterior surface, has a larger curve than those in ordinary use, and the groove extends further up the shaft, and ceases further from the point. The lower piece is first introduced through the stricture into the bladder; and on to the upper piece a gum catheter, of corresponding shape, is fixed, having a silver piece at the lower end, which is marked on the back, or flat portion, by a groove, which thus corresponds to the groove on the rest of the staff. This upper piece being thus screwed on to the piece in the bladder, the catheter is pushed down it until it meets with the stricture, when it is, of course, checked. In this position it is fixed by a screw at the top, and then acts as a shoulder to the staff. The stricture is then divided in the ordinary way, and this division having been effected, the catheter is pushed on. If the division have been effectually performed, it will enter the bladder; otherwise its shoulder will be again arrested at the part which requires division, when it can be again fixed by the screw, and the knife used as required. When the catheter has fairly entered the bladder it is withdrawn, and a common catheter (having the end as well as the eye open) passed over the staff into the bladder; the staff is then removed.

Thead vantages of this plan are: 1. That the shoulder is movable and meets the stricture, wherever the latter may be. 2. That, from the shape of the instrument, the groove in the catheter must always correspond to that in the staff, and be in the median line posteriorly; and the catheter, with its shoulder, is perfectly steady, and does not slip up under the operator's finger. 3. That if any part of the stricture has escaped division, or if another constriction exists behind it, it is immediately discovered, and the shoulder can be at once applied to it. 4. That there can be no difficulty, after the division of the stricture, in introducing the catheter into the bladder, as the steel staff remains all the time to serve as a director. The latter is, perhaps, the most important advantage of this instrument, and one to which several other surgeons have directed their attention, and which they have endeavoured to obtain by inventions of more or less merit. These we do not intend to discuss at present, but will merely mention here, that the late Dr. Mackenzie of Edinburgh, and Mr. Haynes Walton, have proposed modifications of Syme's staff, the principle of which more or less resembles that of Mr. Marshall's instrument. These inventions, however, were never laid before the professional public; and whatever other merit is due to the ingenious apparatus devised by Mr. Marshall, that of originality must also be conceded to him.—*British Medical Journal, May* 2, 1857, *p.* 358.

69.—ON STRICTURE OF THE URETHRA.

By John Adams, Esq., Surgeon to the London Hospital.

[The majority of cases which come under our notice may be relieved without any other surgical interference than the introduction of the catheter.]

I dare say you are aware that there are different descriptions of stricture. Thus nosologists admit of three varieties of this complaint, spasmodic, inflammatory, and permanent strictures. The first arises from a contraction of the muscular apparatus which encircles the membranous portion of the urethra, and may be illustrated in a case where retention of urine occurs in a gouty subject, and in a patient who, after drinking acid wines, &c., finds his stream of water diminishing in size, and becomes the subject of retention of urine. The second form of the disease may be readily observed in severe gonorrhœa, when the stream of urine is first reduced to the size of a thread, and afterwards stops altogether; and the third you will understand by referring to the case under consideration, and which is of most common occurrence. I must say of the first, that when the catheter is employed for the relief of retention, you should select rather a small elastic catheter, and passing it gently down to the seat of spasm, maintain your pressure for a

short time, and the spasm will often yield. Failing this, and you will sometimes necessarily fail, you must order leeches to the perinæum, a warm bath, and a dose of castor oil, with laudanum. These means will seldom fail to relieve the retention, and the patient will continue well for some time, but always liable, under similar circumstances, to a repetition of the attack. Much relief will be afforded in the after-treatment of the disease by the exhibition of liq. potassæ and tincture of hyoscyamus. If the inflammatory stricture is attended with retention of urine, a very similar treatment must be pursued. I may, however, be permitted to make the following remarks, which are applicable to retention of urine under both these conditions:—

You are called to a case of retention of urine, which has existed perhaps twenty-four hours; you find the bladder enormously distended, and the efforts to micturate frequent and most urgent; you trace the history of the case, and you come to the conclusion that the symptoms have been those of inflammatory stricture from severe gonorrhœa; and you believe that the retention results from the swollen state of the mucous membrane of the urethra, accompanied, probably, with spasm of the muscles surrounding the membranous part of the canal. Now you are not in such a case to waste any time in the employment of leeches, warm baths, &c.; but you must at once pass a catheter: a moderate-sized, or rather small elastic catheter, must be introduced carefully into the bladder, and the water drawn off. But if the case is not severe, and the retention not urgent, you may modify your practice. Put twelve leeches to the perinæum, place the patient in a warm bath, give him an ounce of castor oil and thirty drops of laudanum on it, and ten to one but he will pass his water either in the bath or when the oil operates. Indeed, I am of opinion that most cases of retention, except those arising from enlarged prostate, are capable of relief in this way, even though depending on permanent stricture; and I remember one of our house-surgeons telling me, some time ago, that he generally succeeded in such cases in this manner without the catheter, if no attempts had been made with this instrument. Even after the unsuccessful attempts at catheterization, these means will not unfrequently succeed. I have repeatedly witnessed such a result, even where false passages have been made by the forcible efforts to pass a catheter.

But I wish to direct your attention to permanent stricture of the urethra. The most common situation of this form of stricture has been variously stated to be anterior to the bulb in the spongy portion of the canal, or at the membranous part. In the case under consideration the stricture was anterior to the bulb. Of the nature of stricture I may remark that it consists, in its simplest form, of a thickening of the mucous membrane to a greater or less extent of surface, to which may be added a thickened state of the submucous fibrous tissue, and superadded to this there may be a deposition into the cells of the corpus spongiosum urethræ, even accompanied by a thickening of the skin of the penis to such an extent as to encroach upon the canal. In the case before us, my opinion is, that the stricture is due to the thickening of the mucous membrane and submucous tissue, giving rise to a peculiar feeling of elasticity of the part, in consequence of which the catheter becomes firmly grasped when its point enters the stricture. The practice I have pursued in this case is exactly that which is in common use, and the principles of which I will explain. The object is to dilate the strictural part of the urethra, and the cure of the stricture is said to be by dilatation.

The subject requires some explanation. You cannot with impunity stretch living parts as you can those which are dead; for by endeavouring to do so you endanger their vitality, and a sudden overstretching of a canal is apt to do a great deal of mischief; but if you proceed cautiously you may do a great deal without injury; thus, in the employment of Mr. Wakley's instrument you may often succeed, at one sitting, in passing a fair-sized catheter over a small sound first introduced, even through a very tight stricture. In the ordinary plan of treatment by the catheter, in most inveterate strictures, the dilatation of the strictured part is accomplished by promoting the absorption of the superadded tissue by the pressure exerted by means of the catheter. Thus in a severe stricture you proceed in the following manner:—You find that you cannot get your catheter through the stricture or even into it; you therefore pass it down to the stricture and press firmly against it; it yields a little, and you get the patient to keep it in that posi-

tion for some time—say for three or four hours—and then withdraw the instrument; in the course of three days, and after the use of the hip-bath, you try again, you find you have gained a little ground; and after two or three trials at intervals of three days you find that the catheter passes suddenly into the bladder.

Do not be ashamed at being foiled in passing the catheter. I have seen many lives sacrificed to the false pride of the surgeon: all museums will testify to this; and I well remember repeated post-mortems, consequent on injury the result of the surgeon's violence, in his efforts to save his credit as an invariably successful catheterizer. It is false pride; and the practice is essentially bad in principle, for, if the catheter is passed with violence, it often cannot be borne, even if it be in the right direction; but false passages, and other inconveniences, are apt to result from the violent attempts to pass the catheter. I cannot speak too strongly on this subject. Now, it will often happen that, in a very severe stricture, the instrument will readily pass at the second trial, when no apparent impression was made on the stricture at the first. You should bear in mind, also, that a stricture may be limited in its extent, as is the case in what are termed annular strictures, or there may be two or more strictures occupying various parts of the canal, or a very large portion of the urethra may be contracted to a very slender canal; and this condition is apt to result from a thickening of the mucous membrane, and the submucous fibrous tissue. The principle of treatment is the same in all, and it is to that I shall now direct attention. However much surgeons may differ in ideas of the nature, situation, and even treatment of stricture, yet no man ventures to affirm that he can cure a stricture of the permanent class without the use of the catheter. You will have remarked that, in the case alluded to, the catheter No. 4 was first attempted to be passed unsuccessfully, and that, after a few unsuccessful attempts in the manner already noted, it slipped suddenly into the bladder.

Now, here a most important point is gained, and when you have attained this, you may fairly conclude that the after-treatment is all plain and straightforward. But you will, nevertheless, meet with difficulties sometimes of rather a serious nature. Having got the catheter in, I directed it to be secured with tapes, and on no account to be removed until my next visit. I also ordered that a full opiate should be given every night if requisite, and especially if any shivering should occur. On my next visit, at an interval of three days, I found the catheter still in the passage, but instead of being firmly grasped by the urethra, as on the first introduction, I found that it was moved with the greatest facility, and it was covered with a copious mucous secretion. I therefore at once replaced it with an instrument of the next size, and gave similar directions as to its retention, and as to opiates, &c. So at my next visit I passed a larger instrument, and so on, after some time, and proceeding in the same cautious method, I was at last able to pass about a No. 8 catheter; and here I stopped, finding that the urethra did not readily dilate further. You will often find such to be the case, and therefore any attempts at further dilatation would not only be of no use, but would be positively injurious. Be content with what you have done, as an urethra capable of receiving readily a No. 8 catheter will be abundantly serviceable if you can maintain its calibre at that point; and to this your attention must now be directed. Therefore a No. 8 was passed daily in this case by the attending dresser, and when all difficulty was at an end, the patient was taught to pass a catheter himself; and, being directed to use it every other day, or twice a week, he was dismissed with what I conceive to be as perfect a cure as the nature of his case admits.

I advise you to pursue this practice, and you will be succeseful. Be cautious in your first attempts to pass the catheter. Never mind being foiled at first. The best surgeons in the world have failed; they must fail occasionally; but their judgment is displayed better in proceeding cautiously and avoiding violence, than in being determined not to be foiled, and using such an amount of force as leads, by a series of injuries, to the eventual destruction of the patient. I remember a private patient of a late surgeon of this hospital who told me that he had obtained more relief from an advertising quack than from his regular surgeon; for, he said, "You surgeons won't have patience; you use too much violence; whereas the quack whom I consulted was exceedingly cautious in his use of instruments, and if he found himself foiled, he immediately put me on twelve leeches to the perinæum, and gave me a warm bath in his own house; and after this he suc-

ceeded in getting in an elastic catheter easily enough." Well, this will show you the importance of a little caution in the use of instruments.

Let us now consider how a catheter acts in curing stricture. The first effect of passing a catheter through a stricture will be to stretch the urethra or dilate the canal, and often this is all that is necessary; but, too often, you will find that in the course of two days, when you attempt to re-introduce the catheter, you have the same work to do over again. If, on the contrary, you tie the catheter in, a very different state of things invariably happens; and the parts are all loosened around, in consequence of the absorption or removal of the contracting medium, and dilatation is the consequence. I believe that dilatation may occur in three ways in the cure of stricture—first, it may happen from a simple stretching of parts; secondly, it may result from absorption of tissue, in consequence of the pressure of the catheter against the stricture; and, thirdly, it may arise from a softening, or, to use a common expression, a melting down by suppuration of the indurated tissues, as a consequence of the pressure exerted on the part, and the residence of the catheter in the urethra, which, of course, is felt as a foreign body.

You must expect to meet with difficulties even in pursuing the simple practice here laid down. Thus, a patient will tell you that he cannot keep the catheter in. If this be so, your tactics must vary; but, before you make any change in your treatment, insist firmly that your plan must be carried out, and you will frequently overcome the antipathy of your patient to the use of the catheter as recommended. Give him opium, and this will often reconcile him to the inconvenience. A regular febrile attack will frequently dispose you to relinquish your treatment, and to remove the catheter. I do not know why it is, but there is no doubt that shivering and all other febrile symptoms are apt to follow or accompany irritation of the urinary organs. Still my advice to you is, not to be disconcerted by a slight febrile attack; do not alter your plan, but pursue it steadily even with this complication; give opium again, and often the fever will subside, and then you can go on uninterruptedly, as in the case before us. I will not say that there are not cases in which it may be desirable to suspend your treatment; but I would say, do not let trifles divert you from persevering in the use of the catheter as now recommended. Of course you must expect cases in which it is necessary wholly to desist, at any rate for a time, and you may be compelled to leech the perinæum, use warm baths, and give opium largely; when, after having allayed all local and constitutional irritation, you can again resort to the means indicated.

But the obstacles against this mode of treatment which may be deemed insurmountable I shall consider at a future time. Before I conclude my remarks on the subject of catheterization, I must insist on the importance of avoiding undue stretching of the urethra by instruments larger than necessary, and which are always injurious rather than beneficial; and let me again mention the fact, that often after passing only a very small instrument you will find to your surprise that you can readily succeed in introducing a catheter of far greater size than the one first employed, and which was introduced with the greatest difficulty. I suspect that the stricture in such cases is annular or of very limited extent, and that the passing of the catheter has broken it down at once. It will certainly happen occasionally, and I think it is in such cases as those just referred to that a single introduction of the catheter will really effect a cure, and that it may possibly never be requisite again to resort to the use of instruments; but such a desideratum is certainly most unusual, and in most cases, however much they appear to have been benefited by the catheter, it is most desirable occasionally, even at the intervals of ten or twelve months, to pass the catheter. With respect to the curability of stricture, I cannot too much insist upon the fact that few cases of stricture can ever be said to be cured, so that they shall give no further trouble or inconvenience. It is a fatal error to suppose that strictures are often cured. You will generally find on inquiry that a slow, although perhaps almost imperceptible, diminution in the size of the stream of urine goes on for a considerable time, and unless you resort again to the introduction of the catheter your patient will at the end of a year be as bad as he was before, and you will have to go over the same ground again; and hence the importance of teaching a patient to pass the catheter himself occasionally.

There is something in the nature of the newly deposited substances which constitute stricture that has a most remarkable tendency to contract, and there are no medicinal means capable of preventing it; although it is undoubtedly accelerated and increased by anything calculated to irritate the urinary organs. Inflammation of the urethra, as in a case of severe gonorrhœa, will most certainly lead to this unfortunate result; so also stone in the bladder will give rise to the same condition,—nay, even irritation in the kidney, as from a small renal calculus, will favour the same: and hence the importance of avoiding all causes of irritation, as free drinking, &c. Nothing can be considered entirely prophylactic of this disease, save the occasional introduction of the catheter. I have, however, in more than one instance seen cases where what may be considered a spontaneous cure of stricture has occurred, if one can believe the account of the case as furnished by the patient; but this has happened where there has been a total abstinence from stimuli of every description, and the patient has led a most temperate and regular life. This must, however, be considered as an exception to a general rule; and it is not unlikely that the stricture was originally of the spasmodic rather than the permanent variety.

I do not wish you to imagine that the practice I have advised is new. It is as old as the hills, and was the only one pursued when I was a student; and I can only justify myself in directing your attention to it, because, when new remedies are advocated, the old ones are sometimes wholly put aside. Of course it will happen that some patients will not submit to the treatment which I have recommended you to pursue in permanent stricture. Indeed, a man may be so circumstanced, that he cannot lay up and pursue the regimen prescribed; and there are others who cannot really bear the catheter to be retained in the bladder. Hence some modification in the treatment becomes requisite; and the occasional passing of the catheter or the bougie, at intervals of two or three days, is the only substitute for that more efficacious system that I have endeavoured to inculcate. Indeed, in private practice this is very frequently the only method you can employ; patients will not submit to the regimen enjoined, and therefore will only pursue that which may be called the palliative plan of treatment. But even here I would advise the same precautions as in the treatment by the catheter, in respect to the use and management of instruments, the same precaution against attempting too much at once, the same precaution against overstretching the urethra by too large instruments; and, lastly, the same precautions in instructing your patient after his urethra has been fairly dilated to pass the catheter himself occasionally.—*Med. Times and Gazette, Aug.* 15, 1857, *p.* 157.

70.—THE PROBE-POINTED CATHETER FOR EXTREMELY NARROW STRICTURES.

By Henry Thompson, Esq., M.B., Assistant Surgeon to University College Hospital.

[The danger to the urethral canal is greater the smaller the instrument used, and yet even on the dead subject strictures are occasionally found so narrow that the finest probe only can be insinuated through them]

These instances are very rare. But I am inclined to believe that the secret of success *for them*, all other means failing, is to use a sufficiently small instrument. It is unquestioned, that there are some strictures so narrow that a catheter of the smallest size, slender as it is, will not pass them, nor indeed any instrument which is not some degrees smaller. Hence the employment of catgut and elastic bougies of extreme tenuity. Such are necessarily, however, very unreliable instruments, from the impossibility of commanding them in their progress along the urethra, or of even knowing where they go. At all events, that most satisfactory test of success, which should never be dispensed with when it can be employed —viz., the outflow of urine through them, is with such instruments impossible. Hence it is, then, when requiring the smallest size of Syme's staff, I have found the advantage of employing one with a bore throughout. The appearance of the urine at its handle is the best and safest guarantee of the position of a small instrument; and *the smaller the instrument, the more necessary is the guarantee.*

In the autumn of 1855, I had a case which foiled several carefully-made attempts, aided by the means which medicine suggests in such circumstances, and which need not here be detailed. The catheters which I had long used for such cases—viz., two sizes less than No. 1, were obviously too large. The patient passed his urine only in small drops, and was wholly incapacitated by his complaint from business of any kind. I then devised an instrument, which, while it was as small, if not smaller, than any catgut bougie, was also capable of permitting the urine to flow through it. It was at the same time as strong, as firm, and as solid in the hand as any catheter of the size of No. 2 at least. In that case it was perfectly successful. I drew off the patient's urine with it, tied it in his bladder, replaced it by larger instruments, and finally cured him by dilatation. I have employed it in three similar cases since, in which I could not succeed in introducing small catheters, and in all it led the way to a cure by dilatation; that is to say, to a condition in which the patient continues free from every symptom of complaint or annoyance by occasionally passing for himself an instrument varying in size from No. 8 to No. 10.

The lower of the two figures is the "probe-pointed catheter." The eye is seen to the right of the asterisk, which marks the point at which the channel ceases. From the asterisk to its termination, the instrument is solid.
The upper figure represents the steel stilet which screws into the catheter, and fills its interior.

One of these patients, to whose stricture this instrument was the key, had, after repeated failures in London, tried the resources of Paris without success, no one having before succeeded in introducing an instrument into the bladder. That gentleman now enjoys, after twenty years of suffering, excellent health, passing for himself at present a No. 9 catheter once a week.

The instrument, which is made of silver, will be seen, by reference to the subjoined engraving, to have nearly the form of a catheter. Its last two inches, however, are made perfectly solid. This extremity can therefore be made of any size or form desired, these not being limited by the necessity for a channel inside. However small it may be necessary to use an instrument in any given case, so small can this probe-pointed extremity be constructed. At about two inches and a half from the end, the channel begins, and the small eye is placed, the instrument increasing in size first to that of a No. 1, and then to nearly that of No. 2, which is continued throughout the entire shaft. Finally, the whole is strengthened by a small steel rod or stilet, which accurately fills the interior, and to which the handle is attached. The small eye cannot therefore be blocked up with mucus or other matters. Moreover, this rod screws in, and gives to the instrument the most perfect solidity. Having succeeded in passing the stricture, it is carefully insinuated a little further, when, on unscrewing the handle, the urine will issue from the external orifice, by drops only, it is true, on account of the smallness of the internal

orifice, but in a manner which in time relieves the patient, while it assures the operator of his complete success. It may be called, "the probe-pointed catheter." It is needless to add, that the utmost care and lightness of hand are absolutely necessary in the management of so small an instrument; and any deviation from such practice is extremely hazardous. Certainly its use cannot be recommended to beginners, or to those who are not well accustomed to the use of instruments in the urethra.

I may add, that the handle *being removed with the stilet*, it is easy to screw in its place a small steel rod, and slide over it a fine gum-elastic tube, made of silk, into the bladder, if desired, after the solid instrument has been retained a few hours, thus ensuring the absence of difficulty in reaching the bladder a second time, a method of proceeding which Mr. Wakley has done much to introduce into practice. In many hands, such a plan would be the safest and most desirable. Further, the small instrument should not be retained longer than is necessary to facilitate the introduction of the second. This plan being employed for the first step, if preferred, the remaining treatment may be conducted in any manner which the circumstances of the case appear to indicate.—*Lancet, June* 20, 1857, *p.* 624.

71.—*On the Probe-Pointed Catheter for extremely Narrow Strictures.* By Dr. Wm. Murray Dobie, Chester.—[Professor Syme's opinion is probably well known, that there are *no* strictures capable of allowing the passage of urine, even in drops, which cannot be permeated by skilfully-directed efforts with sufficiently small instruments.]

In cases of extremely tight stricture, Mr. Syme is in the habit of using a tapering bougie, of Berlin silver, very much attenuated towards the extremity, which is slightly probe-pointed. He discards entirely fine elastic, gum, and catgut bougies, which Mr. Thompson very correctly characterises as "unreliable instruments." It appears to me that no substantial advantage will be gained by the employment of the new instrument described and invented by Mr. H. Thompson. The appearance of the urine, at the end of a catheter, is doubtless a satisfactory guarantee that the instrument is fairly through the stricture; but before this can take place in the new instrument, more than two inches of a thin metallic rod must be pushed *beyond* the constricted portion of the urethra. This I regard to be a fatal objection to its use. I will suppose the probe-pointed catheter to be used in a case of extremely tight stricture close to the bulb; it is evident that great mischief might be done to the dilated urethra posterior to the constriction. The thicker part of the instrument being wedged firmly in the stricture, the guidance of the terminal portion must be a matter of great uncertainty, even in the most skilful hands, and, in inexperienced hands, the consequences might be most disastrous. The probe-pointed bougie appears to me to be a much safer instrument than the probe-pointed catheter; and its use in cases of retention can always be followed up by the introduction of the smallest silver catheter, which instrument has this great advantage, that *the moment it has passed through the stricture* drops of urine begin to appear at its extremity.—*Lancet, July* 4, 1857, *p.* 19.

72.—*Use of Chloroform in Retention of Urine.*—[The patient had gonorrhœa about twelve years since, and had ever since more or less difficulty in passing his water. Retention of urine came on whilst at Guy's Hospital for some chest affection, and all attempts at passing an instrument completely failed.]

The retention had now been complete for two days, the symptoms were becoming very urgent, and Mr. Cooper Forster was accordingly called to see him. Opium had been most freely given. Having failed in persevering attempts to introduce a No. 2 catheter, Mr. Forster determined to administer chloroform, and then, if needful, to puncture the bladder by the rectum. When completely insensible, another trial was made with a No. 3, which now passed most readily. We cite this case as important, because it proves beyond dispute the influence of the anæsthetic state in relaxing an otherwise impermeable stricture. An opiate

treatment had been fairly tried before, and had failed, and the catheter had also been found useless in the hands of several well-practised surgeons. The plan of administering chloroform in cases of obstinate stricture and retention is one in wide use, both in hospital and private practice; but, as it is not yet in such general favour as it deserves to be, we have thought that so pointed an example of its advantages might be worth bringing before our readers.—*Med. Times and Gazette, June* 6, 1857, *p.* 563.

73.—*Hydrocele Photoscope.* By JOHN C. SAVERY, Esq., House-Surgeon to the Northampton General Infirmary.—I have used a darkened tube in the diagnosis of hydrocele for the last twelve months, and can recommend it as being extremely useful. That which I employ is of tin, blackened within, 7 inches long, 1¼ in diameter at its larger end, and tapering to ¾, where it is furnished with a wooden eye-piece. In sunlight, or in a tolerably translucent hydrocele, a candle can be dispensed with, as sufficient light makes its way through to reveal the nature of the swelling.—*Med. Times and Gazette, July* 11, 1857, *p.* 45.

74.—*Treatment of Hydrocele by Evacuation of the Fluid into the Cellular Tissue of the Scrotum.* By E. STANLEY, Esq., F.R.S.—A simple way of treating hydrocele, which was rapidly successful in effecting at least a temporary cure, was seen at St. Bartholomew's a short time ago in the case of a patient of Mr. Stanley's. The man had laboured for four years under the disease, and the tumour had attained a large size. He had never been under any treatment for it. The method consists merely in puncturing the swelling with a common darning needle, which is then rotated about for a few minutes, and the fluid thus allowed to escape into the cellular tissue of the scrotum. In the case before us, this took place with great facility, so as to produce rapid œdema, and the fluid was very speedily absorbed from the cellular tissue. The patient was quite well in forty-eight hours. He was kept under observation for a week, when, as the fluid showed no disposition to reaccumulate, he was discharged. The simplicity and painlessness of this method would suffice to recommend it in those numerous cases in which the patient will not submit to the cure by injections, even if it held out no prospect of a permanent cure. It is believed, however, that the more favourable result will follow in a tolerably large number of cases.—*British Medical Journal, Aug.* 8. 1857, *p.* 661.

DISEASES OF THE SKIN.

75.—ON PLASTIC OPERATIONS FOR THE RESTORATION OF THE LOWER LIP, AND FOR THE RELIEF OF SEVERAL DEFORMITIES OF THE FACE AND NECK.

By THOMAS P. TEALE, Esq., Surgeon to the Leeds General Infirmary.

[A paper on this subject was published in the 'Transactions of the Royal Medical and Chirurgical Society' for 1855, relating three cases in which Mr. Teale had operated. The author, in the present interesting papers, details these cases more fully, together with others which have since occurred to him, illustrating each case with engravings, showing the condition of the patient before and after operation. The following is Mr. Teale's description of the operations to which the patients were subjected.]

1. *Operation for the Restoration of the Lower Lip.*—The usual cause which renders this operation necessary is the contraction following deep and extensive burns of the neck. As contraction advances, the chin becomes drawn down to the sternum; the mucous membrane of the lower lip is turned outwards, and drawn to the lower edge of the chin; the incisor teeth of the lower jaw gradually assume a horizontal direction, and are drawn much in advance of those of the upper jaw. In extreme cases the lower incisors take a direction almost horizontal.

The tongue sometimes lolls out of the mouth, and the saliva is constantly dribbling away.

To relieve this sad condition the following operation is proposed:—

AA. Lateral flaps formed of everted lower lip and cheek. B. Central portion of everted lower lip.

A.A. Lateral flaps united in the median line, above the central portion of everted lower lip B. C.C. Exposed surfaces left to granulate.

Two vertical incisions, about three-quarters of an inch in extent, are made through the everted lip down to the bone. These incisions are so placed as to divide the upper portion of the everted lip into three parts—the middle being equal to one-half of the natural breadth of the lip, while the two lateral portions are each equal to one-fourth. From the lower end of each vertical incision the knife is carried in a curving direction outwards and upwards to a point situated about one inch from the angle of the mouth opposite to the second molar tooth of the upper jaw. The two flaps thus marked out and deeply incised are then separated from the bone, the mucous membrane uniting them to the alveoli being freely divided. Lastly, a bare surface is made along the alveolar border of the middle portion of the everted lip. The incisions being now completed, the lateral flaps are drawn upwards and united by twisted sutures to each other in the median line, and to the middle portion of the everted lip at their inferior border. In this way a new lip is, as it were, built upon the middle portion of the old one.

2. *Operation for Restoration of the Upper Lip.*—The process of cicatrization sometimes reduces the upper lip to a narrow transverse band, drawn up close to the nose, leaving the upper teeth and gums exposed. This deformity interferes with the perfect closure of the mouth, and causes an unseemly aspect.

The contracted upper lip in the fifth case of the present series was restored to its natural size and function by the following operation:—

A crucial incision is made (*en saltire*), having its point of intersection immediately below the septum of the nose. Each limb of this incision is about one and a half inch in length. The two limbs on each side diverge moderately as they pass outwards to the cheek, and enclose between them an acutely angular flap of skin and other tissues. This crucial incision is extended deeply through the entire substance of the imperfect lip and the cheeks. The parts implicated in the incisions are then freely loosed from their attachments to the superior maxillary bone by the knife being passed upwards between the bone and the remnant of lip. The parts being thus detached, the two lateral angular flaps are drawn across the median line, dovetailing with each other, and thereby increasing the depth of the lip at the expense of its breadth. In this position the flaps are retained by one pin and twisted suture.

3. *Operation for Relieving Contractions of the Neck.*—In some cases the contraction of the neck is so great that the head is bowed forwards, the chin drawn to the sternum, and the lateral movements of the neck greatly restrained. These evils may generally be much mitigated, and sometimes completely relieved by plastic surgery.

In 1839, Mr. Carden, of Worcester, operated upon a girl aged fourteen years, who was much deformed by a burn, which occurred seven years before. The movements of the head were much restricted; the mouth was permanently open; the tongue protruded; the lower incisors projected horizontally; and there was constant dribbling of saliva A transverse incision was made throughout the entire extent of cicatrix in front of the neck. The chin was then drawn upwards, and every tense band connected with the cicatrix was divided until the head was relaxed nearly into its natural position. A flap of skin, three inches long and two and a half inches wide, was detached on each side from over the clavicle and chest. These were raised and united in front of the throat. The degree of improvement effected in this case, and tested by the lapse of four years, was highly gratifying.

Subsequently to the performance of Mr. Carden's operation, a similar proceeding was adopted in several cases, with great success, by Dr. Mütter, of Philadelphia.

I have performed this operation in seven cases since August, 1848, and have witnessed it in some others by my colleagues at the Leeds Infirmary.

In all the cases which I have seen, there was a marked and most satisfactory improvement in the movements of the head and neck. The displacement of the lip was also in a greater or less degree mitigated by the operation of the neck, but in several of the cases this particular deformity remained to such an extent as to *render a special operation* for the restoration of the lower lip subsequently necessary.

In these autoplastic operations on the neck it is of essential importance, as stated by Dr. Mütter, that the incision of the scar should extend from sound skin on one side of it to sound skin on the other, and that every band of adventitious fibrous tissue beneath the scar should be divided until the bottom of the wound discloses a loose healthy cellular tissue.

The flap to be transplanted may be taken from any neighbouring portion of the neck, shoulder, or thorax, where healthy skin can be obtained. In one case, from lack of sufficient sound skin, I was under the necessity of including cicatrised skin in the flap.

The very accurate adaptation of the flap by suture, should be avoided, as great tension renders the flap liable to slough. It is, therefore, better to be content with attaching the flap at its free extremity and one of its borders, and to leave the other border loose. Much may be done afterwards by careful dressing, during the healing process, to rectify any separation of the parts.

As far as I have observed, the transplanted flap rarely unites to the edges of the wound by the "first intention." All that is usually accomplished in the first instance is an organic union of the cellular surface of the flap to the parts beneath. The more close approximation of the edges of skin is obtained during the processes of granulation and healing.

When the bands of scar are so numerous or extensive as to require more flaps of skin than one to be inserted, it is better to repeat the operation at separate times. I saw much constitutional disturbance in one case from the operation having being conducted on too large a scale in the first instance.

After the lapse of some months the transplanted portion of skin is generally found to have yielded to a process of stretching, so as to exceed considerably its original dimensions.

4. *Operation for Restoration of the Lower Eyelids.*—Eversion of the lower eyelid, its tarsal border being drawn far down the cheek, is a frequent result of contracted scars. Besides the revolting appearance caused by permanent ectropeon, the patient suffers habitually from a low form of inflammation of the conjunctiva and cornea, in consequence of these parts having been habitually deprived of the protection of the eyelid.

The eyelid in such cases may frequently be restored to its natural position by the following operation:—

An incision is made across the cheek parallel to the displaced tarsal border, about three lines below it. The portion of skin between this incision and the edge of the tarsus is freely dissected upwards, along with the whole substance of the eyelid as far as the edge of the orbit. The eyelid thus loosened is placed in its natural position, and the chasm left thereby is filled by a piece of skin transplanted from the side of the face. This operation succeeded perfectly in the right eye of William Bradby, the subject of the fifth case. It was attempted with only partial success in both eyes of John Leach, the subject of the fourth case. The want of complete success in this instance was owing to the total absence of any portion of sound skin in the neighbourhood; on which account, I was obliged to transplant on each side a piece of cicatrix, which, having only low vitality, sloughed to a considerable extent. In two other cases, not included in this series, the operation succeeded perfectly.

5. *Restoration of the Upper Eyelids.*—From the contraction of scars of the upper eyelids and forehead, the upper lids are sometimes everted, and their tarsal border is bound firmly to the superciliary ridge.

A plastic operation similar to that of the lower lids may be practised with advantage in this deformity. In the case of John Leach, I operated on each of the upper lids, by making a transverse incision parallel to the tarsal border, at a distance of three lines above it. The substance of the eyelid was then dissected downwards and freely loosened from the edge of the orbit. The upper eyelid being thus restored to its natural position, the vacuity was filled by a piece of skin transplanted from the temple. In both eyes the operation succeeded.—*Med. Times and Gazette, June* 6, 1857, *p.* 561.

76.—*On Mr. Skey's Method of Treating the Cicatrices from Burns.*—[This case occurred at St. Bartholomew's Hospital.] The patient was a little girl (Emma B——, aged six years), the front of whose neck had been burnt some years before, and had so contracted as to produce a number of distinct bands, running from above downwards, without very great deformity. The contraction resulting from the burn was treated, whilst the girl was under the influence of chloroform, by making a number of short transverse incisions in various parts of the cicatrized tissues, which gaped as they were made. This plan Mr. Skey has found very efficacious in some eight cases, all of which had done very well. It has certainly the advantage over dissecting up portions of cicatrized skin, in that there is no danger nor risk of sloughing—an accident which not unfrequently makes a case worse than if nothing whatever had been attempted.

On a subsequent visit, we found these transverse wounds healing well, without any appearance of contraction of the cicatrix. She lay upon a flat bed, with her head considerably lower than her shoulders, and the wounds are dressed with narrow pieces of strapping, so as to approximate the *ends* of a cut to each other —not the sides—and lengthen out the old cicatrix as much as possible.—*Lancet*, *Aug.* 15, 1857, *p.* 169.

77.—*On the Treatment of Cicatrices of Burns and Scalds.* By W. J. Moore, Assistant Surgeon, H.E.I.C.S., formerly Senior Resident Surgeon at the Queen's Hospital, Birmingham.—[Mr. Skey, in the treatment of these cases, instead of making one long incision or dissection of the cicatrix, during the last six months has made numbers of smaller transverse cuts about its surface. Mr. Moore states:]

In the 'Provincial Medical and Surgical Journal,' July 6th, 1852, and the number previous to that date, I published articles entitled "Remarks on the Treatment of Burns and Scalds." In the latter paper, after detailing the good result which followed accidental rupture of the cicatrix of a burn, I say:—

"There also seems to be no reason why the same principle should not guide the knife in cases of this description. Instead of dissecting the cicatrix, or dividing it, as is usually done, I would make an incision in different directions, and even leave small detached portions of integuments, and thus imitate what occurs when the parts are ruptured by force. Each promontory or isolated piece of integument becomes, as it were, a spring from which new matter is formed. This suggestion, however, requires to be practised ere its efficacy can be fully established, and I shall probably practise it in a case now under my treatment, and give the result to the profession."

I have now the notes of several cases in which this plan was followed by great success, but owing to my departure for India shortly afterwards, they have not yet been published.

It has therefore appeared to me, that should any merit attach to the originator of this method of treating the disfiguring cicatrix resulting from burns, such merit must of necessity be mine.—*Lancet*, *Aug.* 22, 1857, *p.* 206.

78.—ON THE TREATMENT OF CHRONIC ECZEMA IN CHILDREN.

By Dr. Behrend.

Dr. Behrend states that he has many cases of more or less obstinately chronic eczema brought to his polyklinik. In some of these it is found on the head and face, in others on the extremities or on the genitals, but in very few on the trunk. The ages of the children have varied from seven months to seven years, while in a few cases even the period of puberty has been passed. These eruptions are very troublesome to both patient and practitioner, becoming obstinate and relapsing in proportion to the length of time that they have existed. A so-called crusta lactea, or an eczema of the scalp, occurring in a child of from eight to twelve months old, is easier of cure than is an eczema in a child of two years old, that itself originally was only a milk-scald. It is a well-known fact that a secretion, originally pathological, may in time become a physiological one, or that which was originally

a diseased condition may become necessary for the preservation of health. Hence arose the fears of metastasis in the minds of the older writers, when called upon to treat affections attended with considerable secretion, that had long continued. They were true observers, and their care upon this point was not without grounds; and Dr. Behrend cannot agree with those who think that all mere local affections of the skin, of however long duration they may be, may be suddenly dispersed, when this is possible, with impunity. Even crusta lactea has usually arisen from a too rich and stimulating diet, and requires general as well as local treatment, and a due regulation of the diet. When the affection becomes rooted into a locality, the skin there acquires secretory functions which are not so easily arrested. If we suppress chronic eczema by mere local treatment in one spot, it will break out in another, and so on. Local means are, however, of the greatest importance, and without them, by the aid of internal means alone, we shall seldom, if ever, be able to remove old eczematous or impetiginous eruptions. Such general means, partly acting by their derivative power, and partly by the specific effects they exert on the blood, must not be neglected. The local indications are the following:—

1. The separation of the scabs or crusts. This may be best accomplished by poultices and fomentations, the former being very applicable when the eczematous spots are limited, and are not situated on the head, face, or neck, where cataplasms should not be applied. It is a good plan to previously moisten the places where the poultices are to be applied with a solution of carb. sodæ (℥ii. ad ℥viii.) When large surfaces are covered with eczematous scabs, a water dressing is much to be preferred. Thin towels or pieces of linen are soaked in a solution of subcarb. potash (℥i. ad ℥vi. or ℥viii), and then carefully applied around the whole eczematous part. Over these dry cloths or towels are laid, and the whole covered over with oiled silk and a bandage. This dressing is renewed every two or three hours, care being taken that the outer envelopes covering the wet ones be kept constantly dry. In a few days the scabs will all have separated. Pure water will not effect the separation like the solutions of potass or soda. The soda is somewhat milder than the potass, and in sensitive subjects, having an irritated skin, should be first tried. If the scabs are placed on the face, neck, or head, the application is not suitable, as the exclusion of the external air, which is essential to its success, cannot be so well accomplished as on the limbs. For these parts, the author therefore uses cod-liver-oil-soap liniment, made by the simple mixture of carb. pot. or carb. sod. with cod-liver oil (℥i. ad ℥i.), and with this the crusts are pencilled over night and morning, having been previously moistened with the solution of soda or potass already mentioned. After pencilling the parts with the liniment in the evening, they are covered with a silk cap, cravat, &c., to protect the bed-clothes. This is removed next morning, the parts are carefully moistened with the alkaline solution by means of a sponge or towel, and all the loose crusts are carefully removed. The liniment and the silk covering are then again applied, and so on again in the evening. This separation of the scabs is of great importance for the cure; for they are the chief cause of the constant itching and scratching, which excite new inflammation and secretion, and renewed formation o scabs. The scabs also prevent applications being made to the diseased surfaces. By their removal much has been already obtained, and we have then only to keep the inflamed surface constantly clean. For this purpose cataplasms are no longer required, but the application of the alkaline washes and the liniments must be continued. Usually after a week's or a fortnight's, or sometimes only after two or three weeks' employment of this procedure, we have, in place of the scabby, itching parts, smooth, red, inflamed surfaces, which no longer itch, and are scarcely painful, but which, if left to themselves, would again produce secretion and scabs.

2. The second indication is, therefore, the removal of the inflammatory conditions of the skin. One of the best means to this end is the application of a solution of ℥j. of acetate of zinc, and the same of acetate of lead in ℥viii. of distilled water, adding to this at the time of using it an equal quantity of strong chamomile infusion. To the extremities this is applied as the water dressing already named, while, when the eczema occurs on the face, &c., either portions of rag wetted with it are applied, or the parts are moistened with it several times in the day and

night. In this way the inflammation may almost always be relieved. The chief difficulty is found in old obstinate cases of eczema, when a knotty condition of the cutis is found to be present, which gives to the finger passed over the surface the idea of numerous small tubercles. The knots are formed by the loosening of the texture of the cutis, and minute exudations produced by the inflammation. Each little knot requires to be touched with the nitrate of silver, which is a very tedious process, but they are usually speedily removed. If these knots are overlooked the eczema will certainly return.

3. The third indication is the restoration of its normal activity to the skin, after having relieved or moderated the inflammation, as indicated by its increasing whiteness and dryness. How this is to be effected will depend upon circumstances, such as the constitution of the patient or the presence of complications and predispositions, which will determine whether derivatives, exutories, or alteratives should be employed, or whether, as in the scrofulous diathesis, iodine or cod-liver oil should be had recourse to. The diet should for the most part be bland, all stimulating and luxurious food and drinks being forbidden. Meat should be sparingly employed, and various unwholesome articles of diet, such as cheese, fish, &c., should not be allowed. Free exercise in the open country air, and a residence at the seaside are especially useful. The means are further aided by applications to the skin possessed of a strengthening or tonifying effect, such as especially alum, sulphate of zinc, sulphate of iron, the oleum cadinum, oleum Rusci, &c. If the eczematous child is at the breast, it should be weaned, or at all events its nurse should be changed, or her system regulated by appropriate diet and aperients.

The practitioner must not endeavour to obtain any hasty cure, weeks and months being required where large surfaces have become accustomed to abnormal secretions. The cure should be gradual, or bit by bit.—*Med. Times and Gazette, July* 11, 1857, *p.* 43*:*

79.—ON THE NATURE AND TREATMENT OF BOIL AND CARBUNCLE.

By Benjamin Travers, Jun., Esq.

[It has been, and is our rule of practice, to use free incisions in the treatment of these affections. The author considers deep cutting neither requisite nor safe—under any circumstances preferring to open them by potassa-fusa, as being less exhausting, and leaving a smaller cicatrix.]

In certain cases of cancer, and other anomalous sores, it is probable that our faith in the local efficacy of strong caustics is undergoing a revival. The operation of the pure kali in changing the face of a smooth and excavated ulcer, discharging a thin ichor, into a healing surface is very marked.

I have known such an action to be arrested by this means, where there appeared to be no alternative to the performance of a complete excision of the part. I am now about to exhibit the decided advantage to be thus obtained in the treatment of boil and carbuncle. By the use of the pure kali, a large anthrax may be destroyed and eliminated with a rapidity and an absence of suffering wholly without precedent in cases where recourse has been had to the scalpel.

In the language of Dr. Physick, "there are three stages in this disorder. The first is premonitory. In the second, the skin has become dusky, and is perforated by pin-hole orifices, whence there is an ichorous oozing," &c. At this time our interference is an urgent necessity. The effect of a caustic is now most marked, and a succession of very severe cases during the past three years has convinced me of the truth of this statement. The formation of a large eschar being a close imitation of nature's method of opening the skin, and which she desires to effect without loss of blood, cannot be wrong, and, indeed, experience proves that it is a safe and judicious proceeding. The pure potassa, having a blush tint when first cast, which it derives from the iron mould into which it is run, is probably the most valuable caustic which we possess for general purposes. It is quite manageable with a little care; it does its work rapidly, if only pure and dry. It kills outright all moist animal substances with which it comes into contact. It gives a good deal of pain sometimes for the first ten minutes after its application, and sometimes the patient makes little or no complaint. If there is nothing more than

uneasiness after the operation, it is a sign either that the preparation has lost its virtue, being converted into a carbonate by prolonged exposure to the vapour of the atmosphere, or it may have been inefficiently applied, or at a wrong time, and before there is any sufficient indication of the points at which the skin will first give way. Lastly the powers of life may be so sunk that the insensibility of a protracted exhaustion is made manifest by an entire exemption from all suffering of an acute or prolonged character.

The caustic-stick may be inserted into a goose-quill by way of handle, in which state it should be preserved in a closely-stoppered phial, or it may, when wanted, be simply picked up with a pair of forceps. The operator then twists some stout paper about one end of the material, and it is ready for use. In the case of a moist or discharging surface, there is no occasion to employ any water. The solution of the caustic is sufficiently provided for by the condition of the parts concerned. When first I used this material in the treatment of boils and carbuncles, I found that the fluid slough sometimes overran the margin of the wound or eschar, and a serious excoriation followed wherever this stream had passed along the cuticle. To avoid this, a dossil of dry flocky lint should be applied upon and around the new opening, and this may be allowed to remain there for some hours with advantage. It is absorbent, and defends the wound from extraneous irritation of all kinds. When a frothy, yeast-like action is seen to commence, and the parts become very dark, it is right to desist; in other words, the effect has been produced. The patient is now directed to preserve the attitude of repose, or, at all events, to remain quietly in his chamber. If the pain be prolonged, or the subject weakly, cordials, or even a full opiate, may be given with advantage. The application having done its work, and the chemical action having ceased, the pain soon subsides, unless the anthrax be unusually deep and extensive. In this particular I can, from numerous observations, fully confirm the experience of Dr. Physick; in short, this and the early separation of the sloughs, constitute two of the strongest arguments for substituting the use of the caustic kali for the knife. Some after-pain there always will be, and that, for a few minutes, may be severe. The patient might express a wish to inhale an anæsthetic. I am not sure that this practice would be always unattended with risk in very large carbuncles occurring in old people, when situated upon the nape of the neck, or in the occipital region; but, in numberless other instances I am not aware of any reason why an anæsthetic should be withheld, though few probably would deem it worth while to wait for such aid, were the operator not so provided at the moment. It is unnecessary here to say more of the third stage—wherein the sloughs are cast off and granulations make their appearance—than that these processes have acquired a progressive activity in the course of a week. A large granulating chasm upon the nape, in which I could easily place the back of my four fingers, has been more than once established after using the potassa, in the course of one week from the time of applying it, where, after using the knife, no similar condition has been achieved at the end of three or four. Of course there is uneasiness, and the appetite must be coaxed, and sleep secured by a full opiate every night if necessary. The carrot-poultice is the best that can be employed with a view to early cleaning and incarning the sore. I may here also take occasion to recommend the yellow basilicon ointmont, also a solution of the chlorinated soda, as being very good applications to this class of sore at particular stages or periods of the healing process. In some bad cases, I have obtained a good result—nay, I have twice been singularly successful in the use of the caustic, where the parties had previously submitted to the old rule of practice—viz., incisions, with the worst possible consequences; but it is expedient for me to state, in conclusion, that matters are only aggravated by applying a feeble irritant like the nitrate of silver instead of a quick consuming substance, such as the pure kali, however well-timed or advisable the operation may be in other particulars. Some years ago, before I was conversant with the nature and advantage of the plan of treatment advocated in this paper, a gentleman showed me what is called an angry boil on the side of his neck. The skin was very red and hard in its neighbourhood, and its apex was prominent, being occupied by a large head of pus. I ruptured the pustule, and then applied the nitrate of silver to the collection with considerable freedom.

In the course of twelve hours violent pain ensued, the surrounding skin became tense and red, indeed almost livid, with greatly increased swelling of the surrounding integument; in short, the tumour had now acquired the dimensions of a carbuncle. In deference to a second opinion, this tumour was deeply incised, and many weeks elapsed before the patient was finally restored. Much blood was lost by the second operation, an accident which, if it did not endanger the patient's life, at all events very much retarded the approach of convalescence.

Postscript.—The impression that the use of the caustic potass is a far safer and more scientific mode of procedure in the treatment of large and devastating carbuncle than the ordinary plan of treatment by incision, will speedily pass into strong conviction with such as are willing to be guided by the patient evidence of fact rather than the blind guidance of hearsay teaching or the poor rules of custom and connivance. The rapidity with which enormous sloughs are cast off; the elasticity shown even in old and broken habits, at a time when the constitutional powers commonly give way irretrievably under the older method; the activity of the granulating and contracting period, are so marked, and have received such repeated confirmation within the limited range of my own personal observation, that I cannot but reiterate, as a matter of certainty, that the artificial destruction of so much skin and subjacent tissue as must, under any circumstances, die and be got rid off by the sloughing process, should always be provided for by this method, which is so close an imitation of the work of the natural surgeon.

One apology for incision I am wholly at a loss to appreciate, as I cannot understand it. It is stated that early cutting saves the structure of the common integument. The discoloured, boggy, ulcerated skin tissue must always die to a limited extent. If it be incised, it encounters no fresh provocative to early separation: its de-vitalization is already so complete, that all idea of sudden relief, such as might be entertained in the face of a simple congestion, must be abandoned. The use of a cutting instrument exerts no influence for good, either present or prospective, in parts so circumstanced. Incision is but a superadded irritation, which commonly induces further induration, and at a later time obstinate sinus and renewed sloughing. Thus much for the varied local results of these two very opposite remedies. The present risk of hemorrhage, and a sudden diminution of all the vital powers, constitute, after all, the prime objection to the scalpel, as it enforces the necessity for having recourse to a far more lenient and philosophical method, so happily suggested by the existence of a remedy, which on such occasions I do not hesitate to term invaluable.—*Lancet*, *June* 6, 1857, *p.* 574.

Ova of Acarus Scabiei 1-600th of an inch in long diameter.

80.—*On the Diagnosis of Scabies by the Presence of the Ova of the Acarus amongst the Scales of the Epidermis.* By Dr. Gull. Scabies often presents such difficulties in diagnosis by the eye only, that every additional microscopic aid is valuable. It is admitted not to be always an easy task to find the acarus itself; but each animal (female) lays many ova, which are readily found attached to the roughened and undermined cuticle in the neighbourhood of the vesicles. I need not say the ova are well known, but their presence as a diagnostic test of itch has been overlooked. The ova are about 1-600th of an inch in their long diameter, and in many instances the fœtal acarus can be seen within the shell.—*Lancet*, *July* 4, 1857, *p.* 7.

SYPHILITIC DISEASES.

81.—ON RHEUMATIC GONORRHŒA.

By Frederick C. Skey, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

One thing has struck me very much in gonorrhœa,—it is seldom found after twenty-five years of age; and as we go on to forty, in the myriads of out-patients seen in the wards and out-patients' department every year, we find the gonorrhœal tendency becomes more what I call "eccentric;" it diverges more from the centre

of the genito-urinary surfaces. As we approach the age of forty in patients, gonorrhœa becomes longer or shorter in duration, more inclined to attack other parts, whether it be the testis, the cutaneous surface, the iris, conjunctiva, &c. I believe gonorrhœa, in fact, is a congestive or dropsical state of the urethra, a constitutional affection, a "tertium quid" of something in the system of the man more than arising from infection from the woman; but in a great many instances gonorrhœa is merely the result of mistaken treatment. You will ask me the question, however,—Is gonorrhœa dependent always on inoculation of gonorrhœal matter? or, perhaps, in other words,—Can patients acquire gonorrhœa without inoculation, as taught in books? I believe they can most clearly. I don't believe at all in inoculation of gonorrhœal matter; the question is one of great practical, every-day seriousness, as on it may often depend the peace of a family. I say the large majority of gonorrhœa patients in private practice—where one can more easily trace out the history of the attack,—the large majority occur in men who have had intercourse with women without any disease whatever of a gonorrhœal character? I am quite satisfied of this in my own mind; perfectly satisfied? I prefer, however, for your instruction, to direct your attention to the books of half-a-dozen military surgeons. Any kind of irritation, even the employment of bougies, will cause a discharge from the urethra, and every experienced surgeon knows when children are violated, a discharge generally follows from the mere injury to the parts.

Behind the lines of Torres Vedras you all know the Duke of Wellington became locked up with a large army. The Duke, with his usual good sense, got up hunting-matches, horse-races, and even theatricals, to amuse his officers and men till the time should arrive for fighting. There were with that army of the Peninsula some of the best surgeons of our day,—Hennen, Guthrie, Rose, Ballingall, Evans. We had a large army then, as you know, surrounded three-fourths by the sea, one-fourth by intrenchments, the Duke himself in the middle—an army of 50,000 men and a few women! Well, what did Evans, Rose, and Guthrie find? that they soon had gonorrhœa enough on hand in their hospitals; but there was no mistake about it, the women of Torres Vedras were quite healthy. This fact was elicited, however, in the end—they had no doubt of it—that the catamenial discharge in one sex will produce gonorrhœa in the other. Mr. Evans was sure, also, that the ordinary secretions of the female will produce even venereal disease!

Now, I'll tell you another case, and I have repeated this case so often, almost *ad nauseam*, that I don't mind repeating it. Such cases, *ex necessitate rei*, must be very immoral, but you are all old enough to see their value surgically, and only in that point of view.

These cases, in their nature as cases in private practice, are of a very delicate character; so any student or other gentleman taking notes for publication, will oblige me by using his own good discretion in not giving them any unnecessary publicity; we must have such cases or none, the true immorality being to remain in our ignorance. I wish you to observe for yourselves; don't mind the written opinions of Mr. B. or Mr. A., embalmed in lectures on syphilis, garnished with extracts pretended to be out of Mr. Hunter. You'll find, if you only open your eyes, there is no such thing as gonorrhœal rheumatism, though there may be rheumatic gonorrhœa. The treatment of these cases amongst scientific surgeons is entirely changed,—so is their pathology; but to the case:

A young gentleman, whom I happened to know, the only son of a clergyman, seduced a young lady. This young man was a sort of laughing-stock for the other boys at College, for he had evidently never gone astray. Well, I know he had intercourse for the first time with this girl about a certain day in a certain week;—any midwifery man will tell you how certain the proofs of this may be, but we are not concerned with that now. There is the fact I want you to observe. The lady was perfectly healthy—so was this young man—yet two months after he came to me with as bad a gonorrhœa, with severe ardor urinæ, &c., as ever I saw in my life. There is the case; there are dozens exactly like it. Medical evidence, I know perfectly well, is often open to criticism; a good deal depends on the character of mind of a surgeon himself. One man is brought up in an atmosphere of casuistry, another is brought up in a state where he does not believe it necessary to think. When I tell this case to some men, as I have done, they don't believe

it; they say that the woman who will admit the embraces of one man, will admit the embraces of any other, and this young gentleman got inoculated, &c., &c. This is fearfully absurd, and a wretched libel on the opposite sex. I advise you as students not to be misled by it when you come to practise for yourselves, or you will make many a home and house desolate. Read, mark, and learn what the surgeons at Torres Vedras discovered; the thing is very common in married life; be careful of your opinions; give the benefit of the doubt to the woman.—*Medical Circular, July* 29, 1857, *p.* 49.

82.—ON GLEET AND GONORRHŒA—WITH A NEW MODE OF CURE.

By Frederick C. Skey, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

Gleet is a disease, as I see it in hospital and private practice, susceptible of very fair treatment and cure, and susceptible of very erroneous treatment. Gleet is not an incurable thing, if you go the right way about it. A very common way is to push your remedies too much,—indeed, far beyond the line where they continue to be useful. I know no surgical disease so over-treated as gleet is: it is managed on what I explained to you recently, as a misapplication of the term "inflammation," and on old routine, the result of that error. Gleet has nothing to do with active inflammation. The term "congestion" of vessels comes nearer to my idea of the disease. I am perfectly satisfied that gleet is the result of a passive state of the vessels, or congestion, with effusion, rather than the result of active inflammation; in fact, there is a local remora, a want of tone; and the primary thing, depend upon it, in treating gleet or gonorrhœa is to get up this tone, to strengthen the centre of the circulation, and by no manner of means to depress this centre! All depletion, purging, antimony, &c., are calculated, I believe, to deteriorate the blood rather than to improve it, or improve the general tone of the constitution in any round-about manner. In hospitals, I have no doubt at all on this point. Some very eminent men of the present day are of opinion that the type of the disease has changed of late years, and that you cannot bleed at all now in cases where it was formerly the rule to do so: this is a very broad question, but it would lead me from the subject of gleet to follow it further to-day.

What is gleet? Who shall define it, or its next door neighbour, gonorrhœa? As I merely propose in these clinical lectures to throw out some hints—some materials for you to think about as you go through the wards—I am abrupt on purpose. Gleet is derived from local as well as constitutional causes. Nothing is more common (if we revert to the history of the disease) than for a man, after a certain lapsus with one of the other sex, to have gleety discharge; if we now add to this, as we ought, that he is dissipated and careless (as nine out of ten such men are)—if he drinks and smokes, and takes a great deal of exercise,—if he continues drinking, especially, and eating very little, and losing tone, nothing is more common, I say, than for this gleet to run on into gonorrhœa. Tell me where one begins and the other ends? You can't; I wish you could. You will say, as many young men going up to college do—that one (gleet) is a sero-purulent disease, the other (gonorrhœa) is a purulent disease. I don't believe, however, that they are two diseases at all, but one. (The effusion into the pleura in pleurisy is serous; tap it, and the next is sero-purulent: do you call it two diseases?) Cure the gleet and you'll have no gonorrhœa—cure the gonorrhœa and you'll have no gleet!

Now, as to the practical part of the matter—a few words as to treatment. We will take a typical case, with ardor urinæ, painful erection, and all the rest of it. Nay, we will say, there is a slight fever, but I deny the stereotyped "inflammation of the mucous membrane of the urethra," &c. How is it to be treated? One surgeon gives calomel and jalap, cubebs and balsam *ad infinitum*, as we see the cases in St. Bartholomew's, in the out-patients' department, literally in hundreds, calomel and jalap modulating the tune into the key of gamboge, black draught, jalap and balsam. Oh, that sorrowful black draught, "senna and what purgative drug" to purge those humours out. Calomel, jalap, gamboge, black draught—there's a catalogue black indeed! I do not here draw at all on my fancy; ask the

patients themselves—their lives are nearly drenched out of them, often by persons who are not medical men at all. Then, on the second day following the first visit to the chemist, or to his apprentice, the patient is ordered to come again, and he has more purgatives, a strong seidlitz powder, blue pill, &c., perhaps to get a full action of the bowels, already exhausted; he is usually ordered also cooling medicines. Then as to diet—I look upon it as perfectly monstrous. I hold it, that gleet, if let alone for ten days, will get well, especially if the man keeps up the tone of his system. Many of the patients with whom I have to do in the better walks of life have their pint of wine a day at dinner, their ordinary meat twice a day, at least, and perhaps a glass or two of ale, especially with their luncheon or supper. I am not quite sure that a glass of brandy and water is not often taken, involuntarily also to be sure, with that odious pipe of tobacco, out in the garden or up in the attic. We have these young men, sons of bankers, young barristers, rich shopkeepers' sons, &c, all living very well, but let any one of them contract a gleet—for I look on gleet as the essential disease, not gonorrhœa—then, forthwith, water gruel and water diet, with starvation, are added to the purgatives. The discharge continues, more profuse than before; at the end of three weeks, there it is still; at the end of six weeks, yes, there it is; but it is now changed—now less seropurulent and more purulent; two and three months elapse, there is the discharge. But now the patient is ordered turpentine, or balsam, or a half-drachm of cubebs, ter in die; or copaibæ guttas xl., with injections of the sulphas zinci, gr. iv., in an ounce of water (a sort of caustic application); or it may be, all these are changed for sulphate of copper or sulphate of alum. Now this is what I meet with every week; it is the old plan of the new books, but I believe it to be very bad treatment indeed—about the worst that rational men could adopt. I would beg of each of you, as you are getting into practice, to act honestly to your patients, and avoid antiquated routine *in a new shape*.

Now, what is gleet? You perceive I repeat the question that we left only half answered. Well, my answer is that in gleet the exhalants of the urethra pour out an abnormal amount of fluid from a specific exciting cause, and we have—I wish you to remember the phrase—a dropsical condition, or dropsy of the urethra?

All that is written of the power of inoculating gonorrhœa or gleet comes to nothing, though books are filled with such things. What is gleet and its cure? that is the practical point—don't tell me of your gonorrheal inoculations as cures, or gonorrheal chancres. Gleet, if let alone, will probably cure itself, but by the plan of treatment I have sketched, so much in favour with patients themselves, and with those men of the spermatorrhœa-chemists' shops who delude the public, it will go on for four months or five months. I have known it to go on even longer than this—but see what you are doing, and what the scientific surgeon must avoid: you begin by destroying your patient's stamina—he is confined so many weeks to his room perhaps, if he is such a fool as to stop there—you administer purgatives, you wind up the clock, and set the liver in order, &c.; but the old purgative system is on its last legs, depend upon it. How much has it to answer for?—it belonged to the school of Cullen; he it was that introduced it, but it is gone. If you had let this man with gleet alone, he would get well. Four or six grains of sulphate of zinc to an ounce of water, acting like a foreign body, has been injected into his urethra, at a time that copaibæ and cubebs have been passing out in his urine; he is weakened by purgatives. You attack him right, left, and centre with physic, and you add irritation to irritation—is that the way to cure him?

I meet cases of gleet nine and ten weeks old, ay, in dozens! they come to me with a long story of all they have been doing—purgatives, balsam, mixtures, nitrate of silver injections, &c.; now I have used all sorts of things myself, led by the old routine. I have given as much as six or eight grains of the zinc to an ounce of water, but I found that I failed by my very eagerness to effect a cure. You will cure the patient to day, so to say, but he will come back as bad as ever in a day or two again. If you use an injection of six or eight grains, as I have just specified, the vessels suddenly contract; but so surely have you "re-action" and all your troubles back again.

This "law of reaction" is no new thing in surgery—take two boys with warts on their fingers, and some of these warts are not much different, in microscopic

structure, from other warty and some cancer growths. One boy has his wart scientifically excised, or rubbed with nitrate of silver, it is gone, but in a few days it comes back again, and is almost rendered perpetual by this process of pruning and nitrate of silver stimulants. The other boy cuts off his wart, and applies a mild milky juice of a plant celebrated for these cures; I cannot give you the botanical name of the plant, some of our learned Thebans doubtless can. Well! what is the result, the milky juice cures the wart entirely and effectually. The nitrate of silver encourages it to grow! I believe that in one case the mild efficient action of the milky juice, "papaveraceæ," or dandelionaceæ, or whatever "aceæ" you please, gradually obliterates the little vessels of the part (we know lactic acid will obliterate larger vessels). Nature works with very simple agents sometimes. In one case, I say, the mild but efficient action of the milky vegetable juice blocks up and obliterates the vessels; in the other case the vessels recoil,—say as the iris shuts out the stimulus of too much light, or the glottis expels foreign bodies, so it is in our stimuli applied to the delicate membrane of the urethra. Our strong injections, ℥j sulph. zinci to ℥ viij of water, do mischief.

The most effectual remedy for this class of cases, gleet, gonorrhœa, &c., that I know, is half a grain of sulphate of zinc to an ounce of rose water. There is no "recoil" of the smaller vessels, no discomfort to the patient—he must be desired to use it five times a-day; but above everything else, keep up his system by tonics, and banish purgatives, antimony, &c.

Order your patient an eight ounce lotion of this kind, containing four grains of the sulphate, no more, and let him have, internally, the tinctura ferri or ferrocitrate of quinine, *ad libitum*—do not alter his diet, except it happen to be egregiously faulty in some way: or you may give five drops of the balsam copaibæ, but do not give it in large doses—the larger the dose the more mischief it does. Gleet or gonorrhœa is not a trifling disease, remember either of them may leave a stricture, and a stricture may lead sooner or later to the utmost misery, if not death, of your patient.

If you would "build up" power, you would cure gleet or gonorrhœa in half the time usually wasted in making it worse, that is my chief position—strengthen the centre of the circulation. I will give you a case. A young man, a farmer from Wiltshire, a highly respectable man, came up to town to a cattle show, and contracted a gonorrhœa; he was "unfaithful to his wife without being aware of it," as some one says in a play of Wycherley's or Beaumont and Fletcher's. This, in a word, was the history that one could extract from him.

He appeared quite sheepish and puzzled about it, but half suspected he had gone where he ought not to. He was most excited and anxious to get well, he would not for the world the doctor or his wife in Wiltshire got a hint of it—well, I cured him in two days. If I had gone the old way about it, he would still have had it at the end of two months, with what amount of family feuds I shall not strive to imagine. Here's another case:—A young gentleman going to be married, got overtaken by the ceremony being required to be done sooner than he expected. I need not go into particulars, but he called on me with a rattling gonorrhœa one morning, and he was to be married that day in the ensuing week! what was to be done? He had gone through a pilgrimage of the old routine remedies. I gave him twelve grains ferrocitrate of quinine ter in die, and told him all would be right, but to use the mild injection most religiously. He got perfectly well in a week, and the nuptial knot was tied—this was before the passing of the "divorce bill," but, if he had not changed his old routine treatment, he certainly could not have got married.

In conclusion, I would say, avoid depletion and purgatives—don't interfere with your patient's wine or beer; as for the *primæ viæ* and all that sort of thing,—leave the liver alone, and trust with confidence to tonics and mild injections.—*Medical Circular, Sept.* 9, 1857, *p.* 121.

83.—ON CALOMEL FUMIGATION IN SYPHILIS.

By Henry Lee, Esq., Surgeon to King's College and the Lock Hospitals.

[The following are some general observations upon the kind of syphilitic disease

to which mercurial treatment is applicable, and the different forms in which it may be administered. Upon these points more fixed principles of treatment are greatly wanted.]

When syphilitic matter is applied to the skin or mucous membrane, if inoculation occur, a certain amount of inflammation will follow. The character of this inflammation will vary according to circumstances, and upon it will depend the results which may subsequently be expected. The action in the inoculated part may terminate in mortification. The death of the part generally involves the destruction of the poison; they together cease to exist, and when the slough separates, an ordinary sore alone remains, requiring no specific treatment. The death of the poisoned part occurs sometimes more slowly; a molecular necrosis occurs. The infected tissue perishes bit by bit, but before one part perishes it affects another; and as each part dies without taking on that peculiar action by means of which the syphilitic poison enters the constitution, the result, so far as the system is concerned, is the same as if death of the infected part had occurred at once.

Instead of terminating in mortification, or phagedæna, the inflammation may end in suppuration. In this action each pus globule is developed from being a part of the living system into an independent cell, unconnected with the organism from which it originated. In this deciduous cell-growth morbid matters are thrown off from the living body, and the observation of a large number of cases enables me to say that this occurs with regard to the syphilitic poison. The specific inflammation which is characterised by the formation of pus, or the suppurative inflammation, is not that by which the syphilitic poison gains admission to the human system.

I have now notes of upwards of seventy cases, none of them of later date than October last, in which the secretion from the primary sores was determined by microscopic examination to be purulent, and in none of these, to my knowledge, has any secondary disease followed. I therefore conclude that a suppurating syphilitic sore is a local disease, and may be treated by local remedies.

This action may be so modified that, instead of the poison being thrown off from the surface of the affected part by suppuration, a part of it may find its way along the absorbent vessels, and its presence may be recognised at any point of its passage by its power of there producing a fresh inoculation. The secretion from the original sore will often consist of particles of various sizes, and the surface of the sore will often appear broken up with a ragged irregular outline. The poison which is carried along the absorbent vessels, is arrested at the first absorbent gland which it reaches. The absorbents appear to take up alike the poison and the elements of the tissue in which it is contained, but the glands connected with the absorbent system have the power of recognising, as it were, and of arresting the poison. An indiscriminate absorption by vessels is here rectified by a discriminative activity of the absorbent glands, and the result is, that the syphilitic poison, although it frequently reaches one set of absorbent glands, seldom or never passes on to affect another set, and consequently seldom or never by this means finds an entrance into the patient's system. This morbid process, then, which for want of a better name we call "ulcerative inflammation," is again a local disease, and does not necessarily require any mercurial treatment. The occurrence of inflammatory or suppurating bubo in no way *prevents* the patient's system from being infected with syphilis; but in that case, upon inquiry, the affection which produces the secondary disease will be found not to be that which produces the suppuration of the gland. These forms of disease may coexist, but do not, except from some exceptional cause, result from the same infection.

In the three classes of local syphilitic disease which I have now very briefly described, I do not mean to say that constitutional treatment may not be necessary. In particular cases it may be advisable to have recourse to mercurial remedies, so as to affect the patient's system, but I do say that, as a rule, mercury in these three classes of cases is not required for the purpose of preventing secondary symptoms.

The morbid process by which the syphilitic poison enters the human constitution consists in a circumscribed, persistent, indolent action, partaking of the nature of the adhesive inflammation. This affection usually commences as a crack, an

abrasion, or a pimple. It is accompanied by little pain, redness, or swelling, unless artificially irritated. The secretion from its surface is small in quantity, consisting often of broken-up epithelial scales; sometimes of globules having various forms, and being often opaque. Occasionally, these globules, especially when derived from a mucous surface, resemble pus-cells; they may, however, be distinguished by the addition of a little acetic acid, and subsequent microscopic examination. If the secretion from any doubtful sore be treated in this manner, if purulent, the situation of each pus-globule will contain within its circumference, one, two, or three little nuclei; if not purulent, such an appearance will not be observed. The sores which I am now describing, never, I believe, except from accidental causes, secrete pus. The nature of the accompanying inflammation is essentially of the adhesive kind, and consequently the base and edges of the sores will generally (although not always) become infiltrated with lymph, which is deposited in a very peculiar way. It will ordinarily be so arranged as to form a layer of equal thickness, surrounding the sore on every side, and the induration which it causes will generally terminate quite abruptly, so as to give to the fingers the sensation as if a piece of thin cartilage had been let into the healthy tissues. The absorbent glands in such a case will be generally enlarged, but not inflamed; they may be felt to roll freely and without pain under the finger, and the skin covering them will be quite unaffected. These glands do not suppurate except from accidental causes, in no way necessarily associated with the disease. When a circumscribed, persistent spot of adhesive inflammation, such as those now described, appears on a suspicious part, and remains without evident cause in an indolent condition, changing but little from day to day, there is the greatest danger that the patient will be affected with constitutional syphilis. These are called infecting sores —infecting as regards the patient's constitution, though not more infecting than other kinds of syphilitic sores, as regards their liability to be communicated by inoculation.

Now as the first three classes of cases—namely, those in which the inflammation terminates respectively in sloughing, in suppuration, or in ulceration—may, as a rule, be treated by local means, so the last, or that in which the accompanying inflammation is of the adhesive character, requires constitutional treatment if we would prevent our patients from having secondary symptoms. A great variety of plans have been at various times recommended for preventing the occurrence of these secondary symptoms, and for curing them when they have appeared. Some surgeons have written works in order to prove that syphilis might be cured by sarsaparilla; others have advocated opium equally strongly. Again, while some have advised the use of ammonia, others have recommended the nitro-muriatic acid. In like manner, guaiacum, China root, mezereon, bark, hemlock, sassafras, juniper, saponaria, dulcamara, the green husk of the walnut, and many other vegetable and mineral products have enjoyed a temporary reputation for the prevention or the cure of syphilis. Of late years the iodide of potassium has been in great repute, and in certain secondary forms of the disease has proved a most valuable remedy. But with regard to primary syphilis, you will now be prepared to ask what kind of affections were treated by the different medicines above-mentioned? Were their virtues tried in cases of infecting, or of non-infecting primary sores? If no discrimination has been made in this respect, it may be inferred that a large proportion of the cases treated consisted of non-infecting sores, and under these circumstances it is no wonder, in due course of time, that the primary affections healed, and were not, in a considerable proportion of cases, followed by secondary symptoms. But let a given number of cases, bearing the diagnostic marks of infecting sores above-mentioned, be treated by any of these remedies, and I will venture to affirm that the result will be most unsatisfactory. In fact, we find that all the remedies which I have mentioned, with the exception of the iodide of potassium, after having had a temporary reputation, have fallen into comparative disuse. Mercury alone, through good and evil report, in spite of the strong prejudices of some against its use, and the no less adverse influence of others, who have used it to an unjustifiable extent, has maintained its general reputation. From within a short time of the recognition of syphilis as a specific disease, to the present, mercury has been extensively employed in its treatment, and during the whole of that time, the majority of surgeons have regarded it as the most effi-

cacious of all known remedies. It must be admitted that mercury has often been injudiciously given, and that it has consequently done much harm. It has, nevertheless, maintained its reputation, and it may be safely affirmed, that general experience has proved that there is no remedy which has the same power to extinguish the venereal disease as mercury. The iodide of potassium, of which I have before spoken, possesses in an eminent degree the power of removing certain forms of secondary symptoms; but according to my experience, it does not permanently cure the disease in the same way that mercury does.

There are different ways of administering mercury. It may be given internally in pills; it may be used in the form of ointment; or it may be used in the form of vapour applied to the skin.

It is not necessary for me at present to enumerate the various preparations of mercury that have been administered internally. They have in common this disadvantage in the treatment of syphilis, that they disturb and irritate the digestive organs, and can seldom be continued sufficiently long satisfactorily to cure the disease.

Mercurial inunction is a very efficient way of using mercury; but it is dirty, laborious, and often little suited to the tastes of those who require its use. It is, however, much less liable to gripe and purge than when the mercury is given internally; and it does not weaken the patient's constitution nearly so much.

There are two principal objects in view in treating a case of syphilis: the first, to remove the symptoms; the second, to cure the disease. Now, a short course of mercury will often effect the former of these objects, as will also, in secondary cases, the administration of the iodide of potassium; but neither the short course of mercury, nor the iodide of potassium, will in general cure syphilis. The symptoms will, it is true, be removed, but they will return; and, practically, it is found extremely difficult to induce patients, in the upper classes of society, to continue a course of mercurial inunction sufficiently long to prevent the occurrence, or the return of secondary symptoms.

Of all the modes of treatment by mercury, none, according to my experience, removes the symptoms so readily as fumigation; none is attended with so little mischief to the patient's constitution; and after none is a relapse so seldom experienced.

The plan itself is not new. It was used in Europe soon after the recognition of the venereal disease at the end of the fifteenth century; and it was subsequently very extensively practised in India and elsewhere. The cumbrous nature of the apparatus, and the want of precise knowledge of the nature of the substances employed, has, even up to the present time, prevented this mode of treatment from coming into general use. Recently, however, the plan of using mercurial fumigations has been much improved. We are indebted to Mr. Langston Parker for having much simplified the apparatus which, at various intervals, was used by Lalouette, Pearson, Abernethy, and others. Mr. Parker recommends that from one to three drachms of the bisulphuret of mercury, to the same quantity of the grey oxide, or of the binoxide, should be used on each occasion. Now, practically, I have found some serious objections to these preparations. The bisulphuret of mercury, when exposed to heat, gives off some vapour, probably sulphurous acid gas, which causes much irritation when inhaled; and I have reason to believe, that the symptoms produced by this preparation have been amongst the reasons why mercurial fumigation has not been more extensively practised. The grey oxide, again, is found to be of uncertain composition, and as obtained at the shops it will often not volatilize at the temperature produced by an ordinary spirit-lamp. When it does volatilize, it is decomposed. It is first converted partially, or entirely, into the deutoxide of mercury, and if the temperature be increased, the oxygen is driven off, and finally the metallic mercury is sublimed. The uncertainty of the composition of this preparation, both before and after it is exposed to heat, naturally implies that its effects will be uncertain; and such, in practice, they have been found to be. Sometimes very little mercurial action has been produced; and, occasionally, the action has been excessive.

The preparation which I have, for the last eighteen months, constantly used, is calomel. It possesses the advantage of being easily sublimed at a temperature which may be commanded in any private house. It is not decomposed either by

heat or vapour water, and a comparatively very small quantity is sufficient to produce all the effect that is required. Since this plan has been introduced, different simple forms of apparatus have been devised for the purpose of volatilizing the calomel, and of effectually retaining it in contact with the skin during the requisite period for absorption to take place. Mr. Matthews, of Portugal-street, has constructed two little lamps which answer the purpose very well. Over one lamp from ten to twenty grains of calomel is placed on a tin plate; and over the other there is a little water. The calomel and the water then volatilize together; and I have found, practically, that the mercurial action is more certainly produced, and more steadily maintained, when mixed with a certain quantity of vapour of water, than when the calomel is used alone.

The best apparatus for calomel fumigation hitherto made is, I believe, that of Messrs. Savigny & Co., of St. James-Street. This has been completed after many trials undertaken at the suggestion of Mr. Pollock, of St. George's Hospital. It consists of a kind of tin case containing a spirit-lamp. In the centre, immediately over the wick of the lamp, is a small circular tin plate, upon which the ten or twenty grains of calomel are placed. Around this is a circular depression, which is half filled with boiling water. The patient places this on the ground, and sits over it, or near it, on a small cane stool. He is then enveloped, lamp and all, in a circular Mackintosh, which Messrs. Savigny have made for the purpose. When a Mackintosh cannot readily be procured, a double blanket answers the purpose very well. At the expiration of a quarter of an hour or twenty minutes, the calomel, the water, and the spirit in the lamp, will have disappeared, and the patient may then get into bed. It is well that a certain portion of the vapour should be inhaled during the bath. This will render the mercurial action more evident upon the patient's gums; but this is not always necessary for the cure of the disease. The length of time that the use of the baths should be continued, is probably about the same as would be required in other forms of mercurial treatment.

During the last eighteen months, I have employed this plan of treatment very extensively at the Lock Hospital, and there we seldom fail to get the patients' gums slightly affected in three or four days. The mercurial action may be regulated with the greatest nicety, either by the length of time the patient is exposed to the vapour of calomel, or by the quantity inhaled, or by the quantity used upon each occasion. It is never requisite to produce salivation, and in the form now recommended any excessive mercurial action can scarcely be accidentally induced. The patients' constitutions are found, at the end of the mercurial course, to be in general as strong, and often much stronger, than when they commenced.

The conclusions which I would draw from the foregoing observations are, that in primary syphilis a large proportion of cases will not require any mercurial treatment at all; and that those which do may with tolerable certainty be distinguished from those which do not; that in those cases of primary syphilis which, if left to themselves, will infect the patient's system, mercurial treatment alone can be relied upon for preventing secondary symptoms; that in cases of secondary affections, although other medicines may remove the symptoms, mercury is much more effective than any other remedy in curing the disease so that the symptoms will not recur; and that of all the modes of administering mercury, mercurial fumigation is that which is attended with the least demand upon the powers of the patient's constitution; it is that which is regulated with the greatest facility, and that which can be maintained without inconvenience for the longest period; and, I may add, that I believe it to be less frequently followed by a recurrence of secondary symptoms than any other mode of treatment whatever.—*Lancet*, *May* 23, 1857, *p.* 519.

84.—*Cure of Syphilis without Mercury.*—It is our duty at all times fairly and impartially to present the various modes employed in our hospitals in the treatment of various diseases, however wedded we may be, in common with others, to certain lines of practice. There are very few at the present day who would

undertake to treat syphilis without the administration of mercury in some of its forms. Many surgeons would hesitate before they would even try the effects of other remedies. The preparations of gold, which are found in the French codex, are used, in place of mercury, in inveterate forms of syphilis, in France, and, we believe, elsewhere. However, on a recent visit to the syphilitic ward of the Royal Free Hospital, where a number and variety of cases of syphilitic disease are to be met with, especially of the secondary eruptions, we find they are treated by the administration of stomachic and tonic remedies and good diet, conjoined with the following formula—viz., sulphur, one drachm; sulphuret of antimony and nitrate of potass, of each five grains; mixed into a powder, half of which is given night and morning, and persevered in till the eruption disappears, the health is improved, and a cure established. Dr. Marsden has employed this mode of treatment for twenty-seven years, in thousands of cases, and he observes, that not one in a hundred instances has he known to return with constitutional symptoms. In the primary forms of syphilis he trusts to stomachics solely, with good diet. This is a very interesting and highly important fact in the treatment of syphilis. The cases of secondary eruptions under this plan of treatment, which we saw on the 1st of June, fairly spoke for themselves, as they were gradually dying away.—*Lancet, June* 27, 1857, *p.* 650.

85.—*On the Treatment of Chancre by Acetic Acid.* By Dr. Collmann.—Dr. Collmann having seen, more than two years since, an account of the successful and rapid treatment of chancre by means of acetic acid, commenced its employment, and reports that in some fifty cases of primary sore in which he has employed it, it has remarkably fulfilled the expectations held out. In recent chancre, indeed, he regards it as a true panacea, while in neglected indurated chancre it hastens the healing process materially.

In recent chancre he at once cauterizes the sore with pure acetic acid, applying it by means of a glass tube thoroughly to the part, and preventing its diffusing itself around by means of charpie. The pain caused is great, and may, in the sensitive, cause fainting. A whitish spot is the immediate result, and cold water dressing is applied. On the third day, at latest, a gangrenous eschar separates, exhibiting a very clear surface, which will heal by common dressing, but to which the author, for the purpose of encouraging suppuration, often applies night and morning a little ointment, composed of ung. basilic. ℥i., hyd. præcip. rub. gr. v., cleaning the sore with camomile infusion. By the tenth day at latest, and often before, the sore is quite healed. On the first and third day an active purgative is administered. Until the sore has healed the diet should in general be spare, although some patients have required full diet and wine. In fine weather the patient need not be confined to the house. When after the fall of the eschar the sore is found not to be clean, the acid should be again applied, and may even have to be repeated a third time. The cicatrix that results is soft, or speedily becomes so under the employment of camomile fomentations. The author, as yet, has met with no example of bubo among his cases; nor has he observed any secondary symptoms, although he has in several instances treated the same patient twice for chancre, and in one instance five times. When the chancre has bee neglected, and has become indurated, if the sore be still open it must be cauterized in the same way; but in such cases mercury or iodine should also be given. The sore often heals with remarkable promptitude.—*Deutsche Klinik, and Medical Times and Gazette, Aug.* 1, 1857, *p.* 123.

DISEASES OF THE EYE AND EAR.

86.—SYNOPSIS OF THE TREATMENT OF PURULENT OPHTHALMIA, IN USE AT GUY'S HOSPITAL.

By John F. France, Esq., Surgeon to the Eye Infirmary, Guy's Hospital.

During the acute stage:—

1. Local depletion by leeching the lids, and scarifying their inner surface, every twenty-four hours.

2. Division of the external canthus, and puncturation of the integuments of the lids (as in erysipelas), when the tension and inflammatory swelling are extreme and prevent exposure of the globes.

3. Scarification of the ocular conjunctiva, according to Tyrrell's mode in radii daily, so long as chemosis is high.

4. Application between the lids, every three, four, or six hours, of drops of a solution of nitrate of silver, containing from three to eight grains in the ounce of distilled water; the strength of this collyrium and frequency of its use depending on the severity of the symptoms, and being, consequently, modified as these abate.

5. Constant fomentation and ablution with decoction of poppies having a drachm of alum dissolved in the pint.

6. Exhibition of mercury, after proper relief of the bowels (croton oil is the most eligible aperient, when one is required, as the rapidity of its effect occasions the least possible delay in commencing the mercurial), until the chemosis is subdued, or the mouth affords the earliest signs of the action of the mineral. This remedy must be guardedly used, when the stage of active interstitial effusion, marked by rising chemosis, has given way to that of ulceration, manifested on the cornea. It should then be accompanied by a tonic regimen and by—

7. Use of quinine, in cases where debility prevails at the outset, or is subsequently induced.

8. Moderately nutritious diet, which is generally preferable from the commencement, and may be progressively improved as the disease recedes.

In the convalescent or chronic stage,—

9. Tonics in diet and regimen, varied local astringents of mild character, and counter-irritants must be used to complete the cure.—*Guy's Hospital Reports, Vol. III.*, 1857, *p.* 192.

87.—ON STRUMOUS OPHTHALMIA.

By Dr. Henley Thorp, Letterkenny.

Scrofulous ophthalmia, or pustular and phlyctenular diseases of the conjunctiva and cornea, attended with photophobia (complicated ophthalmic hyperæsthesia), present themselves under the following conditions:

1. As a sub-acute affection in children sometimes otherwise apparently healthy.

2. In a more chronic form in young persons of a decidedly strumous habit.

3. As a relapsing disease in patients who have been the subjects of one or more previous attacks.

4. As occurring intercurrently during the progress of other strumous disorders.

5. In connexion with impetiginous and eczematous eruptions of the scalp and face, or of the surface generally.

Although strumous ophthalmia presents much diversity in its mode of attack, the great majority of cases will be found to arrange themselves under one or other of the five forms just indicated; I could, therefore, most conveniently, and perhaps advantageously, discuss its treatment under corresponding heads, but, in order to illustrate more fully the views I entertain respecting ophthalmic hyperæsthesia, I shall venture to arrange my practical observations with reference especially to this lesion, and in accordance with the description I have given of its three varieties.

That form of photophobia first referred to, and which is the expression of scrofulous irritation of the optic nerve and retina (optic hyperæsthesia), is the earliest symptom of a considerable number of cases of phlyctenular ophthalmia. It can often be recognised for many days before the true inflammatory phenomena present themselves; and I am certain that, by proper management, the accession of the latter can often be completely prevented. When, therefore, intolerance of light is first observed in a child of strumous habit, and is attended with the precursory symptoms of gastric derangement already mentioned, more especially if the patient has been already a sufferer from previous attacks, let the treatment be commenced at once; here active depletion is contra-indicated, the aspect of the case forbids it, and the sooner the child is prepared for the exhibition of tonics

the better; and with this view (preceded, in some cases, by a gentle emetic) the greatest benefit will be derived from a combination of gray powder, rhubarb, and dried soda, exhibited at bedtime, and a mild, bitter infusion, with sulphate of potash, on the following morning. After these medicines have been a few times repeated, the tongue will be found cleaner, and the digestive organs much improved; and now the remedy most deserving of trial is quina,—it fully merits all the praise Mackenzie has bestowed upon it: I know of no tonic, in the treatment of strumous ophthalmia, of greater value or more general application: under its use the appetite improves, the bodily vigour is increased, and the intolerance of light diminishes or disappears; nor is it necessary to postpone its use until the tongue becomes quite clean. In cases where the digestive organs continue rebellious, and at the same time tonics are indicated by the general condition of the patient, the quina may be commenced before the alterative or aperient medicines are dispensed with, or it may be advantageously combined with them. But the value of various *adjuvantia* must not be lost sight of: a large, airy sleeping apartment, sufficient exercise in the open air, and a simple but nutritious diet, are matters of no mean importance. In winter, the temperature of the body must be maintained by flannel next the skin, and, in summer, the shower or plunge bath may be employed; at this season, also, the hair should be worn rather short, and the head kept cool. I cannot say that I have derived much benefit from local treatment in this first form of ophthalmic hyperæsthesia: light and pure air are the best topical remedies, and the child should be freely exposed to their influence. I feel assured that a steady perseverance in this plan of treatment will generally succeed in checking the disease in its simple form, and avert the consecutive affection of the conjunctiva and cornea. When these structures are attacked, the primary lesion of the optic nerve and retina is complicated, and the case becomes one of compound hyperæsthesia, or strumous ophthalmia, in the ordinary acceptation of the term. But, as previously observed, the advent of this disease is sometimes sudden and acute; there may be, from the commencement, much of general febrile disturbance and local erethism, with a quickened circulation and flushed face, and the early conjunctival injection be attended with considerable photophobia and lachrymation. Such attacks are frequently brought on by repletion with crude and indigestible food. Here, the clear indication is to empty the stomach in the first instance, and the prompt exhibition of an emetic is imperatively called for: a few grains of calomel and James' powder should be given at bed-time, and the pediluvium or warm bath also employed, so as to promote the action of the skin, and, on the following morning, it is desirable that the bowels should be adequately freed by the infusion of senna and sulphate of potash; topical bleeding is sometimes required, and it may be necessary to apply a few leeches to the temples, according to the age of the patient, or the acute character of the local symptoms, but the early use of stimulating eye-drops is most decidedly objectionable. I have known the greatest mischief result from their indiscriminate and premature employment: the practice is certain to accelerate the development, or increase the number, of the phlyctenulæ or ulcers, and aggravate all the symptoms. The appropriate applications are of an anodyne or sedative nature, and can be used either in the form of fomentation or vapour. Let a drachm of either of the extracts of belladonna or conium be dissolved in a pint of water, and filtered through lint; to a wineglassful of this solution hot water may be added at any time, in quantity sufficient to make the whole of a suitable temperature for either steaming or fomenting the eyes; one or other of which processes should be put in practice at least two or three times in the twenty-four hours. At this stage the child must be confined to the house, and the purgative medicines repeated until the bowels have been moderately but sufficiently acted upon, when a most excellent alterative and tonic remedy will be found in a combination of sulphate of quina, gray powder, and dried soda: after some time it may be judicious to omit the mercurial, and give the quina alone, and in larger doses. In some of these cases, also, much benefit will be derived from the well-known combination of Huxham's tincture of bark with bichloride of mercury, as recommended by Sir A. Cooper. Counter-irritation is a powerful resource, and ought to be employed as soon as the more acute symptoms have subsided, or about the same time that the tonic medicines are commenced. For this purpose blisters are commonly had recourse to, but

details as to their size and management are not always sufficiently regarded; the regions behind the ears and the back of the neck are usually selected, but the top of the head, over the anterior fontanelle, is also a very eligible locality; the blister on the back of the neck should be full-sized, and, in tedious cases, it may be necessary to reapply the vesicants, or keep the surface raw with Albespeyre's paper; but the salutary effects of persistent irritation, confined to one point, are doubtful, and the situation of the blister should be changed from time to time, in cases requiring prolonged counter-irritation. This is a precept of much importance, the validity of which I have often tested. Notwithstanding the best care, however, and the most judicious employment of remedies, both local and constitutional, scrofulous ophthalmia sometimes advances; phlyctenulæ form and burst; ulcerations occur in and around the cornea, and threaten to penetrate the membrane; its substance becomes the seat of interstitial abscess, or, through the diffused haziness which dims its structure, we discern the yellow semilunar streak of incipient hypopyon; the disease is present in its most destructive form, and the eye is in imminent danger.

Now, the most advantage will be derived from the adoption of the following system of treatment: calomel or gray powder, with quina and extract of conium; the application of a blister to one or other of the situations already indicated; leeches, which are occasionally required to relieve congestion, or, in some cases, scarification of the lids may be practised, as a very effectual mode of emptying the vessels; the application of nitrate of silver, and the use of the belladonna or hemlock fomentations, as before spoken of, are the means indicated by a just appreciation of the complex nature of the case. Now, in cases such as we are considering, every one is aware of the great difficulty of obtaining a satisfactory view of the eye, owing to the rigidly contracted state of the orbicularis palpebrarum, and instances are known of the ulcerated and weakened corneal structure having given way during rude attempts to overcome the action of the muscle; nevertheless, the object—which is certainly one of paramount importance—can be attained, I am happy to say, without great difficulty or danger, and for some years past I have been in the habit of resorting to the anæsthetic effects of chloroform for the purpose, and can recommend this agent as a most valuable expedient in all cases of intractable photophobia. Under its influence the orbicularis is relaxed, and the eye can be inspected in the most satisfactory manner; and, if necessary, a finely-pointed stick of nitrate of silver, or, which is preferable, a camel-hair brush, carrying a caustic solution of the salt, can be applied with perfect safety to the minutest ulcer. Moreover, I am satisfied that the chloroform exerts a beneficial influence on the disease, by diminishing pain and intolerance of light, and tranquillizing the patient.* As to the proposal of diminishing tension of the cornea by discharging the aqueous humour, and so anticipating, by artificial means, a result which the ulcerative process, if unchecked, is certain to accomplish, not having performed the operation, I can pronounce no opinion on its efficacy. In principle the practice appears sound, but, unless chloroform were employed, must be attended with much difficulty and hazard. As the effects of mercury on the gums of young persons cannot be calculated upon as a test of its curative action, the medicine must generally be continued either until the disease yields, or the cornea is perforated. When this casualty occurs, the treatment has failed, and no further good can be expected from mercurials; these latter must also be immediately suspended should the cornea at any time show a tendency to slough; on the occurrence of this process, our chief reliance must be placed on bark. The question of the influence of light, in these acute cases, is easily disposed of: its effects are pernicious, because too powerful for the highly irritable and inflamed state of the organ, just upon the principle that irritants generally are injurious under states of active congestion: not that it should be altogether excluded, but the apartment ought to be kept moderately dark, and the eyes, moreover, protected by a shade; in fact, we should endeavour to moderate and adjust the stimulus to the altered sensibility of the organ, by admitting more or less light, just as the eye can tole-

* This application of chloroform is not mentioned in any of the standard works on ophthalmic surgery, nor is it alluded to, so far as I am aware, in any of the recently published lectures or memoirs on the subject. Although I am satisfied that so obvious a use of this valuable agent cannot have escaped the notice of others, I believe I am the first to put it on record.

rate its influence; the child will, consequently, be able to move about, gently exercise his vision, and subdue or resist that involuntary and almost spastic contraction of the orbicularis, which, when once confirmed, is so difficult to overcome.

It is a fortunate circumstance, considering the great frequency of strumous inflammation of the eye in these countries, that the resources of art, when promptly and judiciously employed, are generally adequate to avert the disastrous results which the disease, if unchecked in its acute stage, is almost certain to produce; nevertheless, the affection frequently continues, in a chronic or subdued form, for an indefinite period; in one class of cases, by far the most common, yielding occasionally, or remitting in its symptoms, perplexing both patient and practitioner by frequent relapses; or, in another and a rarer type, preserving a steady and unchangeable chronicity, not less remarkable than pertinacious, in which all action, whether healthy or unhealthy, appears suspended; ulcerations, if present, neither deepen nor fill up; the fasciculated vascularity is stationary, or but a few scattered vessels slowly extend themselves over the surface of the cornea. Now it is the former class of cases—the remitting—that so often affords the clearest demonstration of the influence the exalted sensibility of the nerves exerts upon the secondary objective phenomena. Diminution of photophobia is the surest precursory sign of a salutary change; its return or increase is a no less certain harbinger of evil. Immediately that the spasm of the lids, the gush of tears, and sneezing upon exposure of the eye to light, cease, the reparative actions commence.

Few diseases more severely tax the ingenuity of the surgeon, or oftener exhaust the expedients of science in new and untried combinations, than chronic phlyctenular ophthalmia. Allusion has been already made to the efficacy of bark and quina; the other remedies deserving of notice are the various preparations of iron, and particularly the syrup of the iodide, the saccharated carbonate, and the citrate of iron with quina. The muriate of baryta is an alterative of much power; and cod-liver oil may be given in this, as in allied disorders, with the greatest benefit. When I prescribe the muriate of baryta, I usually combine it with the tincture of sesquichloride of iron, which I believe enhances the value of both medicines. The citrate of quina and iron is often advantageously given, with the tincture of henbane or conium. And here I may observe that, practically, a marked difference exists between the two varieties of chronic ophthalmia just referred to, and that in our selection of remedies we should be influenced by a diagnosis of the relapsing or remitting from the more steady or persistent type. Although, beyond doubt, patients will derive benefit from tonics and alteratives, however indiscriminately exhibited, still I am satisfied that the greatest amount of good will be obtained by paying attention to this point, and treating cases coming under the first division upon a purely tonic plan, reserving those medicines that are called alteratives for the other class of cases. It may further be noticed, that, in the remitting type, quina agrees best with the patient during the period that the symptoms assume characters of increased severity, either alone or combined with the extract of conium, and steel medicines in the intervals, when cod-liver oil also is most opportunely exhibited, the stomach being better able to retain and digest it than when the exacerbations are present, and the digestive organs likely to be in an irritable condition. But in the less frequent examples of the disease, when the symptoms are not observed to change so distinctly from time to time in their severity, but to pursue a course of greater steadiness and constancy, the bichloride of mercury, or the muriate of baryta,—the former dissolved in the compound tincture of bark, and the latter with the tincture of sesquichloride of iron,—are the combinations which, in my experience, are best deserving of trial.

[Arsenic is of great efficacy as a tonic in scrofulous diseases, thus it may be used with advantage in intractable cases of strumous ophthalmia, even though no affection of the skin exists, and for this purpose it may be combined with cod-liver-oil, iron, or bark.]

Local applications come to be auxiliaries of much importance, and, of all collyria, solutions of nitrate of silver are the most generally useful, to which small quantities of wine of opium, tincture of belladonna, or tincture of conium, may often be advantageously added when a sedative action is required; but the long-continued use of the nitrate is objectionable, from its well-known property of discolouring the conjunctiva, and therefore, solutions of other salts, as the sulphate

and acetate of zinc, the bichloride of mercury, hydriodate of potash, &c., are occasionally preferable. Wine of opium is an application much used; it is too stimulating in its undiluted state, and should be mixed with equal quantities of laurel or distilled water; but as a remedy against intolerance of light few agents will bear a comparison with prussic acid; Scheele's preparation, reduced to half its strength by the addition of distilled water, or mixed with wine of opium, and dropped in the eye, will sometimes exert a really magical influence.

On the subject of counter-irritation I have little to add, further than to recommend a substance which is not very generally used for this purpose in ophthalmic surgery: I allude to iodine, a strong solution or tincture of which, applied to the outside of the upper lid,* acts as an admirable counter-irritant. Caution, however, is requisite in its employment, to prevent its too energetic action, or any portion entering the palpebral fissure; it should be laid on carefully and *thinly* with a camel-hair brush, and by allowing time for two or three coats to dry in succession, a layer of sufficient thickness may be given to the thin integument. The application produces much pain, which continues for several minutes, and is often followed by some œdematous swelling; this, however, soon subsides, when the cuticle presents a shrivelled, dry, and yellowish appearance, but with the most marked amendment in all the symptoms, both subjective and objective.

Still, we must bear in mind the capricious character of scrofulous ophthalmia—apparent cures are too often but transitory intermissions, and a proclivity to the affection most commonly continues until the arrival of puberty, when the changes occurring in the organization at this period alter the balance of predisposition to diseased action in different structures, and the eye becomes less obnoxious to assaults. Can art establish the immunity which this crisis confers, or, as it were, anticipate the important radical changes incident upon it? I am inclined to think that the principle of establishing artificial drains in scrofulous diseases generally is not always correctly apprehended—the depraved and unorganizable products of the constitutional disease must find some local vent, or else invade the different organs and textures of the body—setons and issues eliminate the *materies morbi*, until the fundamental vice is extinguished by time, or yields to collateral agencies. They can never directly strike at the latent radical evil, but, acting as depurating channels, may prevent the deposition of heterologous products from the blood, until the establishment of the normal vital conditions of the system. Viewed in this light, setons are deserving of more general adoption in all strumous diseases; for myself I feel satisfied that in obstinate relapsing cases of phlyctenular ophthalmia, more especially those following upon or complicating chronic articular disease, when protracted suppurative action has diminished or ceased, setons may be employed with the greatest advantage, as well to avert mischief from vital organs as to preserve the integrity of the eye.

The beneficial influence of change of air in phlyctenular ophthalmia is universally acknowledged, but all practitioners may not be aware of the singular effects of a short sea-voyage in this disease. A few years ago a little boy, who had been a patient of mine for some time previously, crossed from Londonderry to Glasgow, to consult Dr. Mackenzie: he was ordered quina and a collyrium of sulphate of zinc; remedies which, although fairly tried, had already failed in my hands. The child returned in a few days, and surprising was the amendment that had taken place in so short a period; vascularity had greatly subsided; ulcers and specks, which resisted for weeks the action of the most varied applications, were half healed or scarcely perceptible; and a most inveterate photophobia had yielded, as it were, to some magic spell. I might be inclined to attribute the marked change in this instance to some accidental circumstance or coincidence in the course of this notoriously uncertain affection, but that I am aware of another case in which a precisely similar result occurred; I can, therefore, at least mention the expedient as one deserving of trial.

Although in the foregoing observations I have expressed my opinion as to the futility, or even imprudence, of forcing a child suffering from acute ophthalmic

* The application of this solution to the lower eyelid is useless, as the iodine is quickly washed away by the copious lachrymation. There is also some risk of the tears dissolving the iodine and flowing back on the surface of the eyeball: for obvious reasons the coating of the upper lid cannot be displaced in this manner. The following is the solution which I employ:—Iodine, 1 drachm; hydriodate of potash, 1 drachm; compound tincture of iodine, 1 ounce.—Dissolve.

hyperæsthesia out of doors, with a view of overcoming the intolerance by exposure of the eyes to a strong light, I can speak with equal confidence, in chronic cases, of the absolute necessity of the practice. No agent possesses the same power, or exerts the same restorative influence; its exclusion prolongs the affection almost indefinitely. But to obtain the good which this renovating stimulus is capable of exerting, the patient must not be compelled abruptly to "face the light," as is too commonly practised; on the contrary, he must be trained by slow degrees, but steadily and perseveringly, to resist the painful impression first produced, until the abnormal irritability of the retina or other nerves is exhausted or removed, a result greatly promoted by ventilation, exercise in the open air, and the other adjuvantia already noticed.

That form of hyperæsthesia which I have denominated "ciliary" is not, according to my experience, so commonly observed in connection with strumous ophthalmia as with rheumatic and some other affections of the eyeball. I had, very lately, an opportunity of observing it as a sequela of arthritic iritis, and formerly had often occasion to witness an exquisitely painful affection of the ciliary nerves, attended with intolerance of light and other distressing symptoms, produced mechanically by the pressure of hard particles of the crystalline lens against the iris after keratonyxis,—an operation for cataract, at the time I was a student in Dublin, almost exclusively resorted to by one ophthalmic surgeon in the metropolis. My experience, however, of simple scrofulous ciliary hyperæsthesia is limited: a very chronic case under my care, after the failure of other remedies, yielded, apparently, to ten drops of liquor cinchonæ with two of Fowler's solution, given three times a day.

The substance of the foregoing observations may be briefly stated in the following propositions:—

That in all cases of phlyctenular or strumous ophthalmia there exists, of necessity, a special lesion of the nervous apparatus of vision.

That this lesion is the cause of photophobia and the other pathognomonic symptoms of the disease.

That it precedes, in most cases, the development of the inflammatory or objective phenomena; and that these phenomena are directly influenced by this condition, and but remotely by the constitutional disorder.

That the lesion in question is a state of hyperæsthesia, or exalted sensibility of certain nerves, viz., the optic and retina, and the ciliary and conjunctival branches of the ophthalmic of the fifth pair.

That the phenomena attendant upon photophobia—namely, contraction of the pupil, spasm of the orbicularis, sneezing, and lachrymation,—are the results of reflex action, displayed in a morbid form under the influence of this lesion.

That inasmuch as the impression of light upon the retina is competent to excite closure of the eyelids as well as contraction of the pupil, as proved by an experiment of Magendie, optic hyperæsthesia may be admitted to exist as an isolated pathological condition, capable of producing photophobia independently of other nerves.

That the symptoms of ophthalmic hyperæsthesia vary in intensity and character, according as the nerves referred to are separately or conjointly affected; and that physiological experiments, as well as pathological observations, sanction the division of the lesion into three forms.

That the first form (optic hyperæsthesia) is characterized by the impression of light producing a luminous or chromatic glare, attended with a peculiar and distressing, but not painful sensation in the eyes; and that its symptoms, subject to occasional intermissions, commonly precede for several days the appearance of inflammatory phenomena.

That the second or complicated variety of the lesion—that which engages all the nerves before mentioned—being quickly followed by the objective symptoms of strumous ophthalmia, can seldom be recognised for any length of time as a simple nervous affection, although invariably present in all unequivocal examples of the disease.

That ciliary hyperæsthesia (third form) is best distinguished from the other varieties by the neuralgic character of the pain, and that it more frequently follows than precedes the ophthalmic disease.

That a distinction should be made between the ordinary relapsing cases of strumous ophthalmia and those rarer examples of the disorder in which the symptoms pursue a course of greater certainty and steadiness, inasmuch as the therapeutical indications differ in the two varieties.

That in cases of phlyctenular ophthalmia attended with inveterate photophobia, where a satisfactory inspection of the eyeball is desirable or necessary, the anæsthetic influence of chloroform is the most suitable expedient.

That when scrofulous ophthalmia occurs in connection with chronic articular, or such like diseases, and protracted suppurative action is on the decline or has ceased, much benefit may be expected from setons and issues as prophylactic remedies.

That arsenic is a most valuable agent in inveterate cases of this disease, more especially those complicated with chronic eruptions of the scalp or cutaneous surface generally.—*Dublin Quarterly Journal, August*, 1857, *p.* 100.

88.—*Needle-Hook for Operations for Artificial Pupil.*—Mr. Bowman has recently employed, with much seeming advantage in several cases, an instrument which he devised several years ago, and published an account of it, but the use of which has been, we believe, as yet confined to himself. It consists of a needle-pointed hook, and enables the operator to enter the cornea, and drag out the iris with the same instrument, thus obviating the necessity for employing two. In cases in which the lens still exists, care must be taken to hold the instrument on the horizontal plane, as its needle-point projects considerably beyond the hook, and in the attempt to seize the iris with the latter, might possibly, if unduly depressed, wound the lens. These, however, constitute but a small proportion of those requiring operations of this kind; at least such has been the case at Moorfields recently, since the introduction (by Mr. Critchett) of extraction through a closed pupil. For making an artificial pupil after extraction, the needle-hook is certainly admirably adapted, and could not possibly inflict injury. In Mr. Bowman's hands we have never seen any difficulty occur in the withdrawal of the hook; nor could it, indeed, easily occur with due attention to the mode of managing it. One advantage which it possesses is in respect to the very small opening made, and the prevention of escape of the aqueous.—*Medical Times and Gazette, July* 25, 1857, *p.* 89.

89.—LINEAR EXTRACTION OF SOFT CATARACT.

[This method of extraction of Cataract has recently been practised with much success at the Moorfields Ophthalmic Hospital. A very small opening is made, and the operation is called linear, denoting that the corneal incision is to be about a line, more or less, in width.]

The case of a man on whom Mr. Critchett operated on Tuesday week afforded a striking illustration of its benefits. He was the subject of very impaired vision in the left eye, the consequence of a blow; and in the right, which was his better one, by the aid of the ophthalmoscope, it was discovered that the retina in parts was detached. Still, with this eye he could see fairly, when suddenly the lens became opaque. He was thus reduced to a state of almost total blindness, and, although the nervous structure was known not to be healthy, it became exceedingly desirable promptly to get rid of the cataractous lens. The latter was of milky-white appearance, with a tinge of blue, and was equally opaque in all parts. With a broad needle Mr. Critchett made a puncture on the outer side of the cornea, about a line in width, and with the same needle lacerated the capsule and broke up the lens. The lenticular substance itself proved to be less opaque than was its capsule. A channelled curette having been introduced, the whole of the fluid part of the lens escaped; and lastly, with a little manœuvring, the capsule itself passed into the aperture, and, being seized by forceps, was removed bodily. The pupil was now perfectly clear. With a blunt probe a small portion of iris, which had prolapsed, was tucked back, and the pupil was then perfectly round. The

man at once exclaimed that he could see. No inflammation whatever followed the operation, and when brought before the clinical class, three days after, there was nothing about the eye by which it could have been known that it had been operated on. With the aid of a glass the man could see about as well as he could prior to the formation of the cataract. In a case in which Mr. Bowman employed this method of operation in a young girl, about a month ago, the result was just as perfect and nearly as speedily attained as in the preceding. If the capsule be not opaque at the time of the operation, no attempt is usually made to remove it. The cases deemed suitable for this method are those in which the lens is soft and without a nucleus. We have been informed that, in Paris, M. Demarres even ventures to attempt to remove dense nuclei by it, catching them in the extremity of the curette; but such practice is, we believe, deemed to be too uncertain of success to be adopted at Moorfields. It would necessitate a larger opening than is usually made, and, as it is impossible to always estimate correctly the dimensions of the nucleus, would probably, in not a few cases, result in disappointment. If the nucleus be left, it is very liable to fall down behind the iris, and become a source of irritation either to the ciliary bodies or the retina. In cases for which either of them are adapted, the linear extraction has the great advantage over the method by solution that it completes the operation at once, thus preventing the risk of local or general disturbance ensuing.—*Med. Times and Gazette, Sept.* 5, 1857, *p.* 249.

90.—ON CATARACT.

By JAMES VOSE SOLOMON, Esq., Surgeon to the Birmingham Eye Infirmary.

When an eye is cataractous, but otherwise healthy, and its companion in the possession of useful vision, is it expedient to remove the opaque lens? The cataract having been successfully removed, what will be the effect of the operation upon the vision of the patient?

The opinion of the profession has been many years divided respecting the propriety of removing a fully-formed cataract by operation when the companion eye is healthy, or its lens so slightly opaque that useful vision is enjoyed. The discussion of this question will be narrowed, and a solution of it more easily attained, if we exclude from consideration instances of hard cataract occurring in old people, and requiring for their cure to be extracted through a half section of the cornea—an operation that exposes the eye to the risk of destruction; and if we limit the controversy to cases where the lens is of soft or moderately firm consistence, and which are capable of being safely and successfully removed by that beautiful and simple process termed "the operation of solution," or absorption—Keratonyxis.

The advantages to be derived from the successful removal of a fully-formed single cataract, the eye being in other respects normal, will be, according to my experience and reflections, considerable, and may be enumerated as follows:—

1. The natural brightness, intelligence of expression, and beauty of the eye are restored—results, it will be admitted by the most prejudiced, of no mean importance to young females, servants, and others.

2. A more extended range of vision is obtained, *especially laterally;* the eye even unassisted by a cataract glass is capable not merely of seeing but of identifying the features of strangers at a distance of from one to three yards, and men from other objects at from 20 to 200. In Case 31, quarter inch type could be clearly read.

3. Whatever degree of vision may be realized, the tendency to fatigue and functional disorders in the anatomically perfect companion is lessened or cured (as in Case 32).

4. The operation, by giving to the posterior internal tissues of the globe their natural stimulant, light, is a means of improving and maintaining their nutrition, and hence is a preventive of ocular diseases of anæmic origin.

5. Moreover, through sympathy the general nutrition of the corresponding eye will be invigorated, a striking and very instructive illustration of which is pre-

sented by Case 35, when the cure of the cataract was the prelude to the recovery of sight in its amaurotic companion. A parallel instance has been recorded by Serres of Montpellier, in the Annales d'Oculistique, Fév. 1843. In cases 33, 34, 36, 37, 38, &c., even an incipient opacity of the companion lens underwent, in the opinion of those who observed and reported them, a natural cure. The possibility of this, however contrary to our preconceived opinions or daily experience, seems to have been placed beyond dispute by the clinical experience of the late Mr. Guthrie, an authority, it will be admitted, in every respect competent to form an accurate opinion on such a subject. Analogues to the instances of amaurosis above referred to are, I conceive, to be found in those instances where the excision of a disorganized globe has proved curative of disease in its sympathising companion.

In order to preserve the functions of the lensless eye in a normal condition, and confer the greatest possible amount of benefit to the individual's vision, it is desirable that a two or two and a half inch cataract glass should be occasionally worn for the binocular view of near and minute objects, as, for instance, in reading, writing, &c., and a six-inch for the observation of those at a long distance. The focus of the eyes of long-sighted persons is more difficult to adjust than that of others; yet, so far as my experience at present extends, it may always be accomplished if sufficient pains be taken. In one case I succeeded when an optician had failed.

6. The vision of the eye operated upon having been preserved in a state of vigour by the means indicated, it will be self-evident that, in the event of accident or disease causing blindness in its fellow, it would be immediately available for use; whereas, if the cataract has been allowed to remain, the unfortunate patient will have to wait, in a state of blindness, its removal by operation, and will perhaps afterwards obtain only a limited degree of vision, if any, in consequence of long continuous inaction of the special functions of the organ.

The objections that have been raised to operative interference are two in number:—1. That the vision, in consequence of the unequal adjustment of the two eyes, must be confused. 2. That the operation may endanger the safety of the sound eye, by exciting sympathetic disorder.

In regard to the first, my experience will show that confused vision is the exception, and not the rule, and when present can be readily corrected by a cataract glass. It may be added that in the course of the nine years I have been officially connected with the 'Birmingham Eye Infirmary,' no patient has ever complained to me of the result of the operation, but many have testified their satisfaction. The late Mr. Guthrie has referred to some cases in which there was confusion of vision, but he does not state that the inconvenience was irremediable by spectacles; indeed, judging from what he has written on the subject, it is evident that he was not aware of the degree of excellence of sight that may be enjoyed by their aid, and that he had overlooked the physiological part of the question; also, that in the event of a mechanic engaged in working upon minute objects being affected with confused vision from the cause indicated, and not feeling at liberty in the presence of his employers to wear a glass, there would be the alternative of following the example of watchmakers, who labour many hours consecutively with one eye closed.

The objection, that the operation may be the cause of sympathetic inflammation in the other eye, is a myth, which a few months' attendance at an Eye Infirmary, where traumatic and other cataracts are submitted to operation, will effectually dissipate.

In the discussion of the questions propounded at the head of this paper I have designedly abstained, as much as possible, from quoting authorities, except in the form of well-authenticated cases, because the question is one of fact purely, and not of names, and can be decided in a satisfactory manner only by an appeal to clinical records and well-established physiological principles.

Having adopted the latter course, I maintain—

1. That a single cataract of soft consistence occurring in an eye otherwise healthy should be submitted to an operation for its cure.

2. That confused vision is the exception, not the rule, and when present susceptible of correction by an optician's lens.—*Med. Times and Gazette, Oct.* 24, 1857, p. 433.

91.—*On the Use of Sulphate of Atropia in Diseases of the Eye.* By Dr. F. Mosler.—As the result of practical investigations upon the use of sulphate of atropia in ophthalmic medicine, Dr. Mosler arrives at the following conclusions:—1. That the sulphate of atropia is preferable to the pure alkaloid for therapeutic purposes. In a state of purity the sulphate, employed with the necessary precautions, even in large doses (such as five grammes to an ounce of distilled water), produced no unfavourable effects upon the eye. In using it, care must be taken of the absorption of the tears running from the eye and mixing with the solution, and the absorption of the solution itself is to be guarded against. 2. In ophthalmoscopic investigations, atropia has rendered especial services in many cases; in order to diminish as much as possible the inconvenience felt by the patient in its use, attention must be paid to the investigations of Donders, upon the more or less enduring operation of the different strong solutions. The employment of atropia is not *à priori* to be recommended in every ophthalmoscopic investigation. 3. In inflammatory states of the eye, especially those characterized by violent pain, intolerance of light, and abundant lachrymation, as particularly in injuries of the eye, with or without affection of the iris, we have been acquainted with atropia as an essentially soothing agent, as by its operation on the sensitive nerves of the eye it possesses the power of removing rapidly the state of excessive irritation. As a decided remedial agent, it appears moreover to act by its operation upon the motor nerves in the eye, inasmuch as, according to the explanations of Dr. Von Gräfe, it paralyses the muscles which are found in and about the eye, and which in such cases exercise an excessive pressure upon the internal structures of the eye, and in consequence of the return of the blood being impeded, give rise to accumulation of blood in these structures. It is thus explained why abscesses of the cornea under its use are less perforating and more easily healed, and why hypopeon is more rapidly absorbed. 4. Astringent eye-waters, especially the stronger cauterizing fluids, are better borne, and are attended with more rapid success, when the excessively heightened sensibility of the eye, which exists in the cases where this remedy is applicable, has been previously deadened by atropia. 5. Cauterization of the eye, employed only once daily with all necessary precautions, is better borne in many cases than the more frequent instillation of eye-waters, which every time appear to induce a new and well marked irritation.—*Brit. and For. Med.-Chir. Review, July*, 1857, *p.* 235.

92.—*Belladonna for Dilating the Pupil.*—Mr. John C. Savery, House-Surgeon to the Northampton General Infirmary, says:—I have lately mixed ℥ss. of glycerine with ℥j. of extract of belladonna, when I have used the latter for dilating the pupil; it renders it pliable and elastic, and does not produce that disagreeable tightness complained of when the simple extract gets dry and hard.—*Med. Times and Gazette, July* 11, 1857, *p.* 45.

93.—ON THE TREATMENT OF OBSTRUCTION OF THE FAUCIAL ORIFICE OF THE EUSTACHIAN TUBE BY THICKENED MUCOUS MEMBRANE.

By Joseph Toynbee, Esq., F.R.S., Aural Surgeon to St. Mary's Hospital, &c.

[The object to be attained in this disease, is the reduction of the congestion and hypertrophy of the mucous membrane surrounding the orifice of the tube. If uncomplicated with any affection of the tympanum, it will generally yield to the use of general remedies, and of applications to the fauces alone, though much patience and perseverance are often required.]

General Remedies.—The most efficient general remedies are—abundant and active exercise in the open air, and warm clothing. Flannel should be worn next the skin. The throat should not be wrapped up by handkerchiefs, comforters, boas, &c.; these are the sure way of weakening the throat; they keep it warm for a certain time, and when they are removed, the air, which is frequently colder

within than outside the house, causes relaxation of the mucous membrane within. When a single tie handkerchief is worn within doors, no addition need be worn without; in children, where the throat is entirely unprotected within doors, all that should be allowed without is a small silk handkerchief, loosely tied. I am thus particular in giving these directions, because I have been so frequently convinced of their great importance.

The surface of the body should be daily sponged, or rubbed with a coarse towel that has been dipped in cold water, and then wrung out. As those children who suffer from the affection now being considered have usually a languid circulation, and the nervous energy is below par, the towel bath appears to be the more suitable remedy. The towel should be very coarse, and one part of the body is to be rubbed at a time; the skin, especially of the neck, throat, and spine, must be made to become red, and to glow. The bath may be used either in the morning or the evening, but once daily is sufficient. If the patient is very delicate, and will not well bear the shock produced by the cold towel, tepid water may be used. In addition to this bath—indeed, to supersede it in cases, especially in youths about 14 to 16, in whom it is not likely to be carried out effectually—the tepid or cold plunge bath may be resorted to. Where it can be practised, sea-bathing should be resorted to; but in all cases where the whole body is immersed, it is advisable to wear an oil-skin cap, to keep the head dry; not because the application of water to the head is objectionable, but because there is so great difficulty in getting the hair perfectly dry, and the slow evaporation from it is often decidedly injurious. Plunging into fresh-water river in warm weather, is not objectionable. In the treatment of the cases under consideration, too much stress cannot be laid upon the necessity of exercise, bracing air, and cold bathing. I have known them overcome the most obstinate cases of obstruction of the faucial orifices of the Eustachian tubes, when all local remedies and medicines had given but slight or only temporary relief. Care should also be taken respecting the diet of the patient; pastry, sweets, fat, &c., should be avoided, vegetables to be given in small quantities only; the principal food to be bread, especially that containing the bran, meat, and light puddings, as rice, sago, &c. Children should not be overworked in their studies, and they should retire early, the rooms in which they live and sleep should be airy and well ventilated (it is a good plan to have the bed-room door ajar during the whole of the night), and, above all, it is important that the head should be kept above the bedclothes. To overcome the very prevalent habit of breathing through the mouth, whereby the cold air keeps up a constant irritation to the faucial mucous membrane, the patient should be directed to sit down quietly for a certain time daily, and practice the habit of nasal respiration; although it may at first seem difficult, the mucous membrane of the nose soon yields and the air passes freely. Many years since, I pointed out the peculiar erectile tissue of which the nasal mucous membrane is composed, not only in man, but in most mammalia; this tissue renders it a most efficient natural "respirator."

Medicines.—All medicines that give tone to the system may, in succession, be resorted to. Cod-liver-oil, iron in its various forms, iodide of iron, iodide of potassium, small doses of the bichloride of mercury, the mineral acids, and vegetable bitters will be found useful.

Local Treatment.—The most efficient local treatment is undoubtedly the nitrate of silver. It may generally be used in a solid form. Messrs. Weiss have made for me a caustic holder, the end of which is capable of being turned at such an angle that the caustic may be passed behind the soft palate and applied to the mucous membrane of the orifice of the tube as well as to that of the fauces. The solid nitrate of silver may be rubbed over the surface of the tonsils should they be enlarged, and of the faucial mucous membrane about once a week. It should produce considerable irritation and a copious flow of mucus. Stimulating gargles are also to be used; the combination of acids and astringents are of service; iced or cold water is often beneficial, and in order to ensure the application of the cold water to the orifices of the tubes, and also to improve the condition of the mucous membrane of the nares, cold water may be drawn up through the nose and passed out by the mouth. When there is much congestion of the faucial mucous membrane a leech or two, or a stimulating liniment or vesicating paper, may be applied over the region of the tonsils.

The use of the Eustachian Catheter.—It has been, and indeed it now is, the custom with some surgeons to pass the Eustachian catheter repeatedly in cases of obstruction of the Eustachian tube. Now what is the effect of this procedure? If the mucous membrane be not much thickened, air is blown into the tympanic cavity, and the power of hearing is at once restored. As soon as the catheter is withdrawn the tube again closes, and its muscles have not the power to open it, the air that has been forced into the tympanic cavity soon disappears, and the deafness returns. The patient again feels relief from the same proceeding with a similar result, and if the mucous membrane is allowed to remain in the same state no permanent relief is obtained. On the contrary, the repeated use of the catheter seems rather to increase than to diminish the congested state of the membrane. Under certain circumstances, however, the Eustachian catheter is of great value; the judicious course respecting it is to use the above-named plans for the purpose of reducing the hypertrophy of the mucous membrane. In the majority of cases they will be found sufficient to cure the disease, but if after pursuing them for ten days or a fortnight no amelioration ensues, the Eustachian catheter may be introduced, and air may be blown through the tube into the tympanum. It is possible that this operation may tend to facilitate a cure by removing mucus from the tube, or by separating the lips of the faucial orifice. The operation, however, should not be repeated for several days, indeed it is not generally required again.

The mode of applying the Eustachian Catheter.—It has been already stated, that the orifice of the Eustachian tube is posterior and external to the posterior aperture of the inferior nasal meatus. The catheter I am in the habit of using is not quite so large as an ordinary crow-quill, and as the outer part of the Eustachian tube is oval, I have suggested that the extremity of the catheter should be of the same shape. The end of the catheter held by the surgeon should be rather larger than that for introduction into the tube, in order that the end of the *explorer*, or the nozzle of a syringe, can be fixed in it. This end, having a ring on one side of its opposite to the concavity of the curved end, is to be taken into the right hand of the surgeon; the patient being seated in a chair before him, the instrument with the point downwards is to be glided backwards by the side of the *septum nasi*, until the curved end reaches the cavity of the fauces, when it is to be pressed backwards against the mucous membrane of the posterior part of the fauces. It is then to be drawn slightly forwards and then rotated outwards, so that the extremity may turn upwards and catch the orifice of the Eustachian tube, which can be distinctly felt, and the fuller rotation of the instrument is prevented. The catheter is then to be pressed slightly outwards and backwards, and the surgeon will feel it to be embraced by the tube.

For the purpose of securing the instrument a frontlet bandage, with a pair of forceps attached, has been used; this, however, may be dispensed with in all ordinary cases; instead of it the surgeon is now to take the catheter in his left hand, and while holding it lightly, so as not to cause pain to the patient, which the use of the frontlet invariably does, he inserts into the dilated end of the catheter the small end of the explorer, or syringe. The *explorer*, which in my hands has wholly superseded the use of the air-press, consists of an elastic tube about 18 inches long, one end of which, for introduction into the mouth of the surgeon, is composed of a flat portion of ivory with one or two deep incisions upon it, so as to enable it to be easily held between the incisor teeth; the other end has a small piece of steel tubing attached to it, which fits accurately into the end of the catheter. When the catheter has been properly fixed in the tube, and held there by the left hand of the surgeon, one end of the explorer is to be placed in his mouth while the other is introduced into the catheter, and held there by the left hand. Thus the surgeon has the right hand at liberty; with this he takes the otoscope, and introduces one end of it into the ear of the patient under examination, and it is held there by the patient; the other end is held by the surgeon in his own ear, or it may be made sufficiently light to remain there without holding, and his right hand is free. The medical man then proceeds to blow air gently through the explorer, at the same time that he listens, by means of the otoscope, to ascertain whether it enters the tympanum; and if it does enter he can distinguish the peculiar sound which is produced. When the tympanum is free from mucus the air is heard to pass in a stream against the inner surface of the mem-

brana tympani; when mucus is present a peculiar gurgling is heard; and if the mucous membrane is thickened a peculiar squeak or other bubbling may be perceived. It is not advisable to blow hard into the ear, but to make a few successive puffs, listening during each to detect what sound may be heard in the tympanum. Sometimes no air enters, the mucous membrane being too thick to allow it to pass; under such circumstances it is not well to attempt to force air into the tympanum; great mischief has frequently resulted from such a proceeding; the mucous membrane has been lacerated, the air has been forced into the sub-mucous tissue, causing extensive emphysema. Still more serious results have occurred: the patient has been killed instantaneously, the cause most probably being the effusion of air through the fenestra rotunda (its membrane having been lacerated) into the labyrinth, the shock upon the nervous system causing instant death. Inasmuch as the forcible distension of the tympanum, while blowing the nose, frequently produces giddiness by pressure upon the labyrinth, it need not be a cause of surprise that the effusion of air into the labyrinth should prove fatal.

The Excision of the Tonsils.—On the supposition that the tonsils, when enlarged, pressed against and closed the faucial orifice of the Eustachian tube, the operation for excision or partial excision of the tonsils has long been practised for the relief of deafness. Although, as already shown, the tonsil, however hypertrophied, cannot cause occlusion of the Eustachian tube, still the removal of a portion in cases where it is *much enlarged* is sometimes of service, by diminishing the congestion of the mucous membrane at the orifice of the tube, and it perhaps also may operate beneficially by allowing the muscles of the tube to act more freely. This operation is, however, very rarely required, and the best rule to follow is not to excise a portion of the tonsil, which appears to have important functions independent of the fauces, unless it evidently interferes with the general health of the patient, or unless the obstruction of the Eustachian tube resists the other measures already indicated.—*Medical Times and Gazette, August* 29, 1857, *p.* 212.

MIDWIFERY,

AND THE DISEASES OF WOMEN, ETC.

94.—ON THE PHYSIOLOGY AND TREATMENT OF PLACENTA PRÆVIA.

By Dr. Robert Barnes.

It is now generally taught, that in partial placental presentation it is enough to rupture the membranes; and that afterwards the case may be left to nature altogether. These cases, in short, have been classed, as far as treatment is concerned, in the same category as the cases of hemorrhage from detachment of the placenta from parts of the uterus remote from the cervix. Wigand and Nägele especially insisted upon this, that the plug might be trusted to far more than was generally done, and that by the aid of this means, and the evacuation of the liquor amnii, many cases might be treated without turning.

The principle and rule of treatment of flooding before delivery that were generally taught until Professor Simpson revived and urged the doctrine of Kinder Wood, and Radford, may be expressed as follows:

1. When the placenta is not found at the os uteri, or when it is found at one side only of the os uteri, trust greatly to nature: use the plug, ergot, or, lastly, rupture the membranes.

2. When the placenta is found extending completely over the centre of the os, there is no safety but in delivery. The only doubt in this case is as to the time and manner of effecting the delivery.

For the last few years the position of the obstetric world in relation to this problem in practice may be sketched as follows:—

1. In cases of partial placental presentation, rupture of the membranes, the use of the plug, and other temporizing expedients, will generally be sufficient.

2. In cases of complete placental presentation, and in those of partial, where the flooding is unusually profuse, we have to choose between two methods: forced delivery, and artificial detachment of the placenta. But concerning this choice there prevail many conflicting opinions.

a. With some, perhaps many, there is no question in any case. These see no safety but in delivery, and condemn the practice of detaching the placenta absolutely.

b. Others, with Kinder Wood, would detach the placenta in those cases of exhaustion where forced delivery cannot be resorted to without peril to the life of the mother; or, with Dr. Radford, in those cases also where the os is partially dilated, where the membranes are ruptured, and where strong contraction exists—a condition, I presume, considered to contra-indicate turning; and also in cases of narrow pelvis.

c. Others extend their faith in this method to the full latitude of the precepts of Dr. Simpson. These would detach the placenta in the following cases:—

"1. When the os uteri is rigid and undilatable.
2. In first labours.
3. In premature labours.
4. In labours supervening earlier than the seventh month.
5. When the uterus is too contracted to allow turning.
6. When the pelvis or passages are organically contracted.
7. In cases of exhaustion.
8. When the child is dead.

9. When the child is premature and not viable."

In the not very probable event of a case occurring that should not fall under one or other of the preceding heads, it would remain to be considered whether evacuation of the liquor amnii or turning should be resorted to.

Here I may close the historical part of our subject. I will now proceed to explain what I conceive to be the *true* anatomy and physiology of placental presentations.

Causes of Prævial Attachment of Placenta.—It would indeed be a triumph exceeding, because superseding, all therapeutical improvements, if we could arrive at such a knowledge of the etiology of placenta prævia as would enable us to obviate the occurrence of this abnormity. That prophylaxis will ever supersede therapeutics in this matter can, however, scarcely be anticipated. Still it is eminently desirable never to lose sight of the fundamental question of etiology in our enquiries.

Why is it that the placenta is occasionally developed on the cervix uteri? It is well to ask first, why it is that the placenta is commonly developed at the fundus? Let the consideration of the law precede that of the exceptions. The reasons appear to be obvious enough. As the ovum emerges into the uterus from the orifice of the Fallopian tube, it is usually caught in a fold of the softened, thickened, and coagulated lining mucous membrane of the uterus in the immediate vicinity of the point of entrance. There it fixes itself, and there it grows; and that part of the superficies of the chorion which lies in apposition with the original seat of attachment naturally becomes developed into placenta, whilst the villi of the remaining part of the superficies disappear, or at least do not assume the placentary character. It is a matter of doubt, however, in my mind whether there be one part of the superficies of the chorion which is primordially more especially destined to be developed into the placenta than the rest. What part of the superficies shall be developed appears to depend upon the accidents of contiguity to the uterine mucous membrane, of disease, and other circumstances; that is, that part of the chorion which is in opposition with the decidua vera will be most disposed to furnish the placenta. But if we examine the pregnant womb and ovum at an early date, even as late sometimes as the fourth month, we perceive that the entire superficies of the chorion is in intimate and extensive vascular relation with the decidua. And even at the end of gestation, it is no uncommon thing to find that the villi of the chorion have not altogether disappeared from any part, but that there still remain numerous vessels all over its surface lying in contact with vessels of the decidua, and which may be regarded as analogous to the developed placenta. There is a beautiful specimen of an injected uterus and placenta of the eighth month in the museum of St. Thomas's Hospital illustrating this fact. There is another fact illustrating this position. In a most remarkable case of placenta prævia which I dissected, the placenta was found, at the end of the ninth month, spread over at least five-sixths of the entire surface of the uterus, leaving but a small space at the very fundus of the uterus which was unclothed by placenta. Why, it may be asked, did the placenta in this case spread itself so extensively? I believe the following is a rational conjecture:—The placenta was everywhere extremely thin. The ordinary superficial development was insufficient for the nutrition of the fœtus; more and more vessels were therefore called for, until they had formed a placenta of the enormous extent we see. Owing to the narrowing of the uterus towards its neck, it is highly probable that sufficient placenta cannot be easily developed in the case of prævial attachment without spreading beyond the usual limits, or acquiring very unusual thickness. Thus Levret has drawn especial attention to the shape of the placenta in prævial attachment; it is represented from nature in Hunter's well known plate. The organ is much thicker in the middle than at the edges, and when placed on a flat surface it takes the form of a mamelon. I myself have observed that in cases of central attachment the placenta is commonly much larger than it is when seated at the fundus.

That the uterine mucous membrane can at any part furnish the uterine element of placenta is certain. The fact of our having to deal with placenta prævia is a sufficient proof. Why should not the chorion at any part furnish the fœtal element? Facts seem to show that it may. The remarkable example I have just described is strong evidence. Further evidence may be drawn from the observa-

tion of specimens of extra-uterine pregnancy. In such cases, the ovum being lodged in an abnormal situation, ill adapted to supply sufficient nutriment for the embryo, it is not uncommonly found that the greater part or the entire surface of the chorion is developed into placenta. There is a well-marked example of this in Guy's Museum.

There is a form of placental growth by no means uncommon, which further corroborates the view that any part of the chorion may be developed into placenta, according to the requirements of the embryo. There are the *placenta spuria* and the *placenta succenturiata*, to prove that true placental outgrowths may take place at a distance from the main placenta. Sometimes a placental mass of the size of a crown piece or larger is found wholly separate from the main placenta. This is not an unfrequent cause of secondary hemorrhage after delivery. The *placenta succenturiata* remains adherent after the expulsion of the true placenta and the bulk of the membranes.

But there is yet another fact, of extreme importance in relation to this subject. I have been struck with the frequency with which prævial attachment is complicated with disease of the placenta and fœtus. In examining and reflecting upon particular cases it has appeared to me that placental tufts may shoot out from one part of the chorion in preference to other parts, because some points, being diseased, are unfitted for efficient placentary development, or because some parts of the chorion, itself healthy, may be in contact with an unhealthy portion of decidua. Thus, if the fundal mucous membrane is diseased, there will be a tendency to placental development on that aspect of the ovum which is directed towards the lower segment of the uterus.

Another circumstance illustrating the frequent complication of disease with prævial placenta, is adhesion. It is important, however, not to confound the cases of true adhesion, in which there is organic change of structure, or abnormal deposit in the decidual portion of the placenta, with those more frequent cases in which the adhesion is merely the result of absent or ineffectual contraction of the uterus. We shall see bye-and-bye that the muscular structure about the lower segment of the uterus is far less purposely adapted to cast off the placenta than is the muscular structure of the fundus. This is one cause—a frequent one, and often unsuspected—of placental adhesion or retention. During my researches into the disease of the placenta, many placentas have been brought to me, which having been retained, had been manually separated from the uterus on account of supposed morbid adhesions. It was rare to find in these specimens any trace of disease.

In a recent excellent paper, the present Dr. Legroux says, that placenta prævia mostly occurs in pluriparæ, and that it is due to the greater than normal enlargement of the uterus, which thus allows the ovum to spread its attachments lower than is possible in the more inferiorly contracted, or pyriform, uterus of primiparæ.

One circumstance has struck almost every observer, and that is, the frequency with which the prævial attachment of the placenta has occurred in the same patients. Some women are, therefore, especially prone to this complication. Is it rational to conclude that some women are especially prone to an "*accidental*" attachment of the placenta to the lower segment of the uterus? No. It is not then an "accident;" but an occurrence depending upon definite and ascertainable causes.

I believe the etiological arguments thus enunciated are well founded. They do not exhaust the etiological history. There are probably other causes. To complete the list is, I submit, an object eminently deserving of research. We should not rest contented with the quaint evasion of Portal, that these things happen "selon qu'il plait à la nature de se jouer."

Diagnosis of Placenta Prævia.—Are there any signs by which we may discern the existence of placenta prævia before the occurrence of labour? This question is important, because, if we knew that this complication existed beforehand, we should be forearmed, and the better prepared to encounter the impending difficulty. Levret has examined the question with his usual acumen. He enumerates the following signs of central or lateral placenta:—

1st. The belly of the patient is not pointed, or rounded as a ball, but somewhat flattened.

2ndly. It appears as if it were divided into two parts, as in the case of twin-

pregnancy; but that which essentially distinguishes the first case from the second is, that the division is not found exactly in the middle, nor according to the vertical line of the body, but more on one side than the other, and a little obliquely. Moreover, if we question the woman, she will admit that in the first months of pregnancy, she felt a swelling, with hardness, on one or the other side of her belly.

3rdly. This hardness had gone on increasing and had never changed sides.

4thly. This side is the most painful spot of the whole belly, and that in which she feels the movement of her child the least.

These signs are perhaps wanting in precision, but their existence in any given case should at least indicate more minute investigation.

Gendrin gives two signs. He says that a pulsation may be felt at the os uteri not synchronous with the mother's pulse; and, secondly, that owing to the interposition of the placenta *ballottement* cannot be performed. Neither of these signs is universally true.

It may be stated that the lower segment of the uterus is generally larger, softer, more fleshy than in ordinary gestation. The presenting part of the child either cannot be made out at all, or very indistinctly; and occasionally, when the os uteri will admit the finger, the quaggy placental mass may be felt. Sometimes a persistent dragging pain in a particular part has led to a stethoscopic examination, when the cervical attachment of the placenta has been accurately determined. This I have myself experienced.

Dr. Cohen, of Hamburg, has described the means of diagnosticating placenta prævia in a paper to which I shall again have occasion to refer. His especial object is to determine which side of the lower segment of the uterus the main bulk of the placenta adheres to. He says the side of the uterus to which the main placenta grows is more swollen. In by far the greater number of cases this side is *painful*. The pain in the right epigastric region known to every accoucheur is a suffering so common in these circumstances that we regard the cases in which it does not appear there or on the other side as exceptional. Whenever the pain was strong, Cohen always found considerable fibrinous deposits in the placenta, and often stringy adhesions of the fœtal placenta to the uterus. The smaller part of the placenta, he says, is attached either to the *right* or *left side;* so seldom to the fore or after side, that for diagnosis it is enough to examine the right and left sides.

Moreau places little confidence in the condition of the os and cervix. He says: "One only phenomenon may cause a suspicion of the cervical insertion of the placenta: this is the epoch at which the hemorrhages occur. Generally, they take place early in pregnancy, but they never arise before the moment when the neck of the organ begins to unfold itself. Most frequently it is from the sixth to the seventh month."

The indications in diagnosis may be usefully summed up as follows:—

1. The general signs, such as flattening the abdomen, division of the abdominal tumour, and especially swelling and pain in one side of the pelvis pointed out by Levret, should lead to minute exploration by the finger and stethoscope.

2. Abortions, disease of the placenta, dead children, and placenta prævia in former pregnancies, should also incite to minute physical exploration.

[The source of the hemorrhage is doubtless the uterine surface itself, for the structure of the placenta is opposed to the rapid transit of blood, and moreover a detached portion is always soon choked up with coagulated blood, and if more proof still be required, Dr. Merriman saw the blood issuing from the uterine surface in a case of inversion. Is the hemorrhage arterial or venous? Dr. Mackenzie contends that it is arterial, from a consideration of the following facts.]

1. Having opened the uterus of a pregnant bitch, and detached the placenta, he observed that the blood flowed freely from the uterus, and that it was *arterial*.

2. Having injected defibrinated blood into the hypogastric arteries of a woman, the placenta being previously partially detached, he again observed that the blood flowed exclusively from the uterus, and from the utero-placental *arteries*.

3. He adduces the recorded observations of many practitioners to show that, in women flooding from placenta prævia, the blood was arterial in colour.

This last evidence is necessary to complete Dr. Mackenzie's case, for the evi-

dence drawn from his experiment on the dead woman is not enough to prove that venous blood may not regurgitate and escape from the uterine sinuses in the living woman. Dr. Chowne has shown how freely water will escape from these sinuses by injecting the vena cava backwards.

It is certain that in the majority of cases it has not been very carefully noted whether the blood issuing from the vagina was arterial or venous. But in some it is particularly specified. I am tempted to quote the following case, given by A. C. Baudelocque, from Baudelocque the elder.

Case 6.—"A woman, seven and a half months advanced in pregnancy, sat down upon the grass for a few moments to rest after a long walk. Soon after, she felt in the fundus of the womb and in the loins dull pains, which she attributed to fatigue. On the same evening, her abdomen appeared larger, and it increased so much during the night as to excite her surprise. Having but feeble pains, she got up, and took, as usual, a cup of milk coffee. Immediately after this breakfast, she lost some water, tinged with blood, and experienced slight faintings, which obliged her to return to bed. When seen by Baudelocque, at half-past twelve o'clock, she was pale and dying; her pulse could hardly be felt; she fainted every minute. I thought at first, he says, that she had lost torrents of blood, but no clots had passed, and the linen was hardly stained by a sanguineous serosity. The neck of the womb, situated deeply towards the sacrum, was fully developed; the orifice was opened to the size of a piece of twelve sous, and its edge was soft. Slight pains were felt from time to time, expelling every time a little *clear scarlet blood*, the escape of which was followed by fainting. I brought the orifice down to the middle of the pelvis, dilated it gradually, and in less than half an hour it exceeded the size of a large écu. During this time, a forceps was being sought for. As soon as it was brought, I opened the bag of membranes, and the head presenting, I seized it with the instrument, and extracted it. The child gave no sign of life. Before the rupture of the membranes, and when the mouth of the womb had opened to the size of an écu of six livres only, such a large quantity of *blackish clots* had come away, that I estimated it at more than would have filled a hat. Then there escaped a considerable quantity of *fluid scarlet blood*. The faintings became more marked and frequent.....The placenta presented itself spontaneously, and was extracted almost as soon as the child. Its external surface, a very small portion excepted, was covered with coagulated blood; it had occupied the fundus of the uterus. From this moment the woman lost but little blood....."

I offer the following commentary upon this history with confidence. The hemorrhage was due, as Baudelocque concludes, to detachment, probably almost complete, of the placenta. The placenta had not been adherent to the neck of the uterus. The symptoms indicate an internal hemorrhage. The appearance of the placenta, when removed, and the history of the case, point to detachment of the placenta as the cause of the hemorrhage. The source of the hemorrhage was not the neck of the womb, for the symptoms of profuse internal hemorrhage, and the escape of bright scarlet blood externally, were observed before any examination or any attempt to dilate the mouth of the womb, which might be supposed to have caused laceration of its substance, had been made. The bright scarlet blood escaped on the occurrence of the pains, and each loss was followed by fainting. The large quantity of blackish clots that came away in a mass, was that blood which had been first lost, which was the result of the internal hemorrhage. This blood, from being retained in the womb, had had time to coagulate, and had been blackened by contact with the liquor amnii. All the blood which was observed at the moment of escape, was arterial in character; and this arterial blood could have no other source than the arteries of the uterus.

Drs. M'Clintock and Hardy, in their admirable work, p. 206, relate a case of hemorrhage from complete placental presentation, in which it is stated that "there came a sudden gush of about *a pint of florid* blood."

I have myself distinctly observed the arterial character of the blood escaping under similar circumstances. It is also to be borne in mind that the sudden intermitting gushing character of the discharge is more compatible with an arterial than with a venous source.

Believing, however, as I do that the weight of evidence turns in favour of the views of Dr. Mackenzie, I do not think that the venous origin of flooding can be

altogether excluded. In a state of uterine muscular atony, such as often attends flooding from placenta prævia, the mouths of the uterine sinuses must remain patulous, and unless obstructed by clots, may easily give passage to retrogressive blood. The cases of what Dr. Chowne has properly called "passive hemorrhage," seem to establish this fact.

[We must next inquire into the varieties of the seat of placental attachments.]

The placenta may be attached to the fundus or upper zones of the uterus—*fundal* placenta; it may be seated on the middle zones—*lateral* placenta; it may encroach downwards upon the cervical zones—*latero-cervical* placenta; or it may grow entirely over the inferior pole, rising on all sides so as to occupy the cervical zones—the *cervico-orificial* or *central* placenta. The fundal and lateral placentas are not, unless under very exceptional circumstances, liable to detachment, or to lead to flooding, before the birth of the child. The latero-cervical and the central placentas are, however, so liable. The extent to which this liability goes is greatly affected by the extent to which the encroachment takes place within the cervical zones. In this case there may be little or no hemorrhage; but should the encroachment proceed further down, the danger of hemorrhage much increases. There are cases of flooding before the birth of the child, in which no placenta can be felt, and which are yet strictly cases of placenta prævia. How, it may be asked, do we get evidence of this? Nothing is more simple.

The following case shows one kind of proof:—

Case 7.—On the 13th May, 1852, my assistance was required by one of the midwives of the Western General Dispensary. A poor woman, weakened by poverty and hard work, having had two children at full term and of full size, was in labour at nine A.M. For two days previously she had had hemorrhage, which was still going on. The head was low in the pelvis and lying in the first position, and there appeared to be sufficient room; it had, according to the midwife, been in the same position for four hours without any advance. The pains had ceased altogether. Pulse feeble; face pale; great exhaustion, anxiety, and depression of mind. Fearing that further hemorrhage might be fatal, I determined on delivering by forceps. Whilst waiting for the instrument, I directed the midwife to give an enema. I comforted the patient by assurance that she would do well. Almost immediately after, effective pains returned, and the head was expelled in an hour. No further hemorrhage. Child still-born.

It appeared to me that the uterine contractions were arrested in the first instance under the influence of anxiety and terror. The midwife, before sending for me, had sent for Mr. Cholmeley and Dr. Babington (she was a patient of Queen Charlotte's Hospital), and more than two hours had been thus lost. My arrival and assurances restored her confidence; and under the beneficial influence of that feeling the uterine contractions returned. The decidual surface of the placenta presented numerous specks of osseous deposit; the margin of the placenta presented large fresh coagula of dark colour in the substance, and very large fresh coagula were attached to the very edge, and had evidently proceeded from a rupture of the circular venous channel which courses round the placenta.

It is this presence of coagula in the margin of the placenta which proves that it had been detached during labour, and that it had encroached upon the cervical region of the womb. In cases of this kind it is often remarkably well seen how dependent the hemorrhage is upon inactivity of the womb, and how completely contraction checks it. Some most instructive cases of the class have been described by Dr. Tanner and by Dr. Stephen Monkton, of Brenchley. They unfortunately neglected to record the state of the placenta after removal. But Dr. Monkton clearly adopts my view of the nature of these cases. He says, "They approximate to the unavoidable hemorrhage of Rigby; the placenta being not prævious, but sufficiently near the os to come within the scope of that expansion which occurs about the cervix and lower segment during the last months."

Case 8.—On the 21st June, 1849, a young woman at the full term of her pregnancy died in convulsions, under suspicions of poison. I assisted at the post-mortem examination by order of the coroner. The placenta was attached to the whole anterior wall of the uterus from the fundus down to the cervix, but not quite reaching to the mouth. The position of the placenta was exactly that which is presumed to have led to the hemorrhage in the cases just referred to.

Recently this subject has been experimentally examined by Dr. Von Ritgen. He found that the bag of membranes burst at the edge of the placenta in 22 cases; it burst at one inch from the edge in 8 cases; between one and two inches in 12 cases; between two and three inches in 16 cases; three inches in 5 cases; between three and four inches in 4 cases; at four inches in 6 cases; between four and five inches in 8 cases; at five inches in 3 cases; at six inches in 6 cases; and at eight inches in 3 cases. It follows that since the distance of the edge of the placenta from the rent is absolutely decisive as to the distance of the edge of the placenta from the os uteri, that the edge of the placenta rested on the os uteri in 22 cases, and was within one inch in 32 cases, and so on. This proves that the placenta has commonly a much lower seat than has hitherto been believed.

This frequent latero-cervical attachment of the placenta has other important bearings in obstetric practice. I must beg permission to digress for a moment to refer to them. It was pointed out by Levret that it was a frequent cause of laborious labour and of post-partum hemorrhage. The attachment of the placenta to the lower segment of the uterus so modifies its thickness, vascularity, and capacity for contracting equally with the other portions of the uterus situated in the same zone, that the labour is rendered painful and lingering; and, when the child is born, the faulty position of the uterus, added to previous exhaustion, disposes to a renewal of hemorrhage.

I believe these considerations present a rational explanation of a multitude of cases of præ-partum hemorrhage, lingering labour, cross-births, and post-partum hemorrhage, the cause of which has been altogether overlooked.

Having considered the varieties of seat of the placenta, we are naturally led to examine the relation of the several parts of the muscular structure of the uterus to the placenta in its different positions. The general disposition of the muscular fibres of the uterus may be taken to be pretty accurately determined. There is a general accordance amongst anatomists concerning the leading points. The dissections of the Hunters confirmed, correcting somewhat, the description of Ruysch, and these in their turn have been confirmed by the dissections of Sir Charles Bell, Professor Owen, and others. Preparations may be seen in most museums which exhibit clearly the disposition of the muscular fibres in the different regions. I must, however, recite to you the description of Sir Charles Bell, not only on account of its graphic beauty, but also because he has laid the anatomical foundation of those physiological views concerning prævial placenta to which I was led by clinical observation.

"It has been proved by the sections of the uterus made in different states of its contraction, that the order of the muscular fibres is calculated so as to close the vessels; that where nature has provided for the attachment of the placenta, there the broken vessels are guarded by the provision of the surrounding muscular texture; but we know also that during this contraction of the superior part of the womb, the lower part dilates and relaxes. Now if the contraction of the womb be essential to the safety of the mother, what will be the effect of the attachment of the placenta to a part of the womb which must relax during the labour! Every one knows the peculiar danger of *placenta prævia*, that each labour-pain as it returns increases the violence of the flooding instead of checking it.

"I have been led to conclude that *the placenta cannot be partially separated if it be attached in a regular circle to the fundus of the uterus:* it cannot be partially separated, and cannot be separated bodily until the uterus is permitted to have a great degree of contraction by the delivery of the child; the circular muscles of the fundus being agents in a double capacity, that is, both in expelling the child and in constringing the uterine vessels, by the time that the child is expelled the vessels of the fundus are greatly diminished in diameter. Further, the place and strength of these muscles being perfectly regular and uniform, their action must have the effect of equally drawing the surface of the uterus, which is in correspondence with the margin of the placenta; but no one part of it will be separated until the general restriction is nearly completed. This will not be the case when the margin of the placenta extends irregularly, or when the placenta is attached to the side of the uterus. After the delivery of the child in cases of flooding, it *is not uncommon to find a portion of the placenta low down in the uterus, and separated, whilst the greater portion remains attached to the fundus.*

In examining the inner surface of the uterus by dissection, I have seen the part corresponding with the placenta irregular in its form, and *extending towards the side and neck of the uterus.* In such circumstances of the attachment of the placenta, the retraction on the lower part of the womb being to a greater extent than the fundus will account for the too early separation of that margin of the placenta which stretches towards the orifice, and also for the hemorrhage which is a consequence of this partial separation, but in the progress of the labour, and after the discharge of the waters, the more powerful efforts of the uterus draw the muscular fibres more closely around the bloodvessels, and then the flooding ceases."

I am then entitled to rest the anatomical foundation of my views upon the authority of Sir Charles Bell.

[Dr. Barnes has shown, in cases of placenta prævia, that detachment of the portion implanted within the cervical zone of the uterus may be enough—certain favourable conditions concurring—to control the hemorrhage.]

Now this partial detachment is an operation that admits of being accomplished by the introduction of one or two fingers, and is therefore feasible under the precise circumstances which preclude turning or total detachment.

We have, then, here a new remedy, one applicable at the very juncture where ordinary means are impossible or dangerous. As contrasted with the operation of totally detaching the placenta, it has the further advantage of not endangering the life of the child.

As contrasted with forced delivery it has also the advantage of being less hazardous to the child.

I shall presently describe an operation based upon an imperfect appreciation of my views, proposed by Dr. Cohen, of Hamburg. It consists in detaching the smaller segment of the placenta, which adheres to one side of the cervix. This operation is certainly calculated to be of eminent service in certain cases; and I have no doubt it has often been performed undesignedly, or without the guidance of an intelligent principle, when endeavouring to rupture the membranes and turn. That has been done tremblingly as an accident, and without intelligence, as an unavoidable step towards the attainment of a different end, which was of itself the means of safety—the real end that a true physiology would have dictated.

The operation which I propose is, to carry the detachment further, so as to separate all that part of the placenta which adheres within the cervical zone or region of the dangerous placental seat.

It remains to endeavour to generalize the varieties of cases of placenta prævia; and to endeavour to define the methods of treatment more particularly applicable to each variety.

1. We have those terrible cases where the os uteri is rigid and undilated, the flooding profuse, the powers of life ebbing fast; where to wait for spontaneous arrest of flooding, or the natural dilatation of the os, is to wait for death. These are pre-eminently the cases for resort to the operation referred to. It must, however, be first stated that this class admits of being further subdivided. There are cases in which contraction of the uterus is going on; there are cases—more dangerous still—in which contraction is absent. Labour with relaxation is dangerous under almost every condition: it is eminently so when complicated with placenta prævia.

Where contraction is present, we possess one necessary element of safety; we may be satisfied with the artificial separation of the placenta from its attachment to the cervical zone. Where contraction is absent we must at the same time use every available means of rousing the contractile energy of the womb. Sometimes the stimulus imparted to the reflex system by the necessary manipulation is itself enough to excite contraction. But not always. We must then give stimulants internally; apply warmth to the surface if the skin is cold and there is great depression; rub the abdominal muscles and the body of the uterus firmly. This is a case where the ergot of rye is especially indicated. If it fail, then we have galvanism, which rarely or never fails—an agent perfectly under control, which we can apply and intermit at pleasure, and whose force we can graduate as we like. Dr. Radford has, I think, fairly established the value of this agent in cases of this kind.

Dr. Cohen, of Hamburg, has described an operation which may be distinguished as the *Partial Cervical Detachment of the Placenta.* It is not founded

upon a full appreciation of the true physiology of placenta prævia, but I have no doubt that in many cases the operation will prove sufficient to control the hemorrhage and convert the labour into a natural labour. Dr. Cohen describes it as follows:—

The Operation of Partial Cervical Detachment of the Placenta.—The object of this operation is. *to convert a central into a lateral placenta*, in those cases where the symptoms are too urgent to warrant us in trusting to the spontaneous efforts of nature to effect this end. By it we seek to change a labour, *quoàd* placental attachment, from preternatural into natural.

Time.—Even in this comparatively simple operation it is desirable to wait until the os uteri is a little expanded. It may be justifiable to trust some time to the plug; but if the symptoms are too urgent for delay, one or two fingers may be at once passed through the os. Seek to determine which side of the uterus bears the great bulk of the placenta; feel for the edge of the placenta on the opposite side; rupture the membranes during a pain; tear the membranes freely from the border of the placenta, and sweep the finger round half the circumference of the os uteri internum, so as to detach the placenta completely from that side of the uterus to which the lesser portion adhered. This done, there is nothing to prevent the os uteri from expanding, and carrying the liberated portion of placenta over to the side where the bulk of the organ adheres. In many cases this will be enough to arrest the hemorrhage. Nature herself will do the rest.

This is the extent of Cohen's recommendation. He affirms distinctly that he has in numerous cases practised this method with success; that he has never lost a mother, rarely a child. It is to be regretted that he has contented himself with this general expression of the result of his experience, and that he has not recorded the cases in which he has put this practice to the test. For want of this, his essay is essentially dogmatic. It certainly is quite in accordance with my own repeated observations of the natural course of labour with placenta plævia. It may be contended that the good done is really effected by the rupture of the membranes. I have no doubt whatever that the evacuation of a portion of the liquor amnii, by permitting the womb to diminish its volume, greatly favours contraction and expedites labour. But it certainly does not, as I have before proved, account for the good result itself. One advantage of the loosing the placenta from its adhesions to the os and from the membranes, lies clearly in releasing the os and cervix from a mechanical impediment to dilatation, and further in obviating the rending of the substance of the placenta during dilatation. Some obstetric practitioners to whom I have mentioned this subject have expressed a doubt whether the placenta is liable to be torn in this way. I have, however, seen such cases, and many are on record.

If the hemorrhage should continue, or be renewed with urgency, I propose as the next step—

The Total Cervical Detachment of the Placenta.—The detachment must be carried further, by sweeping the finger round between the placenta and uterus on that side to which the main bulk of the organ adheres. In this manner the whole of that part which had been seated within the cervical zone will have been detached. Now this detachment will not *of itself* stop the hemorrhage. We may, I think, tranquillize our minds as to the effect on the mother of that small portion that will escape from the detached placental surface. But the uterine vessels may pour forth blood until the hæmostatic resources of nature or art come into play. The resources of nature are those I have before described: continued contraction of the muscular structure of the womb, the contractile action of the coats of the uterine arteries, and the formation of coagula in their mouths. In the majority of cases these resources are sufficient; the hæmostatic process may, however, be further assisted by plugging again. A method of plugging is recommended by high authority, which appears deserving of attention. Moreau advises the application of a lemon, the end of which has been cut off, to the os uteri, and to retain this *in situ* by firm pressure through rags or sponge. The acid juice favours coagulation as well as the pressure, and retention of the blood. The soaking of the sponges or rags used for plugging in vinegar is a common practice; but it seems to me reasonable that more powerful styptics should be used. I suggested some time ago the injection of the sesquichloride of iron. Dr. Schreir, of Hamburg, has related some instances in which this agent was employed with success. M. Dupierris, of Ha-

vana, advises the use of tincture of iodine. He says that he has injected a mixture of one-third tincture of iodine with two-thirds water, in one hundred cases of uterine hemorrhage of various kinds with uniform success. He relates three cases of hemorrhage attending labour. The sesquichloride of iron, however, appears to me the preferable agent.

By the proceedings I have described, we may reasonably hope that in the vast majority of cases the hemorrhage will cease. If it should not, time will have been gained; the os uteri may have become soft and dilated; and, in the event of its being felt necessary to resort to forced delivery, this operation may be performed with comparative ease and safety.

2. There is another class of cases, happily more frequent than the preceding, where there is less urgency, more scope for temporising. We have seen that the expansion of the os may be effected without necessary loss of blood to such an extent as to constitute flooding. In the conduct of such cases we have in the physiology which I have enunciated a guiding principle that carries a rational faith in the resources of nature. It is in these cases that the natural tendency to restrain the floodings caused by the successive detachments of zonular portions of placenta is most strikingly marked. A knowledge of this principle will give an intelligent confidence in all those measures, such as the plug, ergot, rupturing the membranes, which have been recommended on various physiological or empirical grounds. Even in these cases the operation of Cohen, of freeing the smaller segment of the placenta, so as to allow it to be carried over to the side of the uterus which holds the main body, may be of essential service.

3. There is a third class of cases in which the principle is all-important. I mean those cases where, after even alarming losses, the hemorrhage has ceased spontaneously. Under the prevailing dogmas the arrest of hemorrhage inspires no hope in the breast of the accoucheur. He is taught to believe that it will "*unavoidably*" return; he hastens to deliver; and the poor woman who had reached the haven of safety is destroyed by the operation, a victim of the "nimia diligentia medici."—*Lancet, July* 4 *and* 18, *August* 15, *and October* 10, 1857, *pp.* 2, 52, 159, 357.

95.—APPLICATIONS OF THE NEW PHYSIOLOGY OF PLACENTAL ATTACHMENT TO THE TREATMENT OF PLACENTA PRÆVIA.

By Dr. R. Barnes.

The rules of treatment at present in force have all been dictated or influenced by theoretical doctrines essentially erroneous. One word in especial has exerted a most tyrannical and mischievous influence: the word "unavoidable hemorrhage," being assumed to embody the whole theory of placenta prævia, has created and maintained a blind and indiscriminating belief that interference, in the form of forced delivery, is imperatively called for. A striking word too often catches the assent by postponing investigation, and, like the sword of Alexander, cuts the knot it cannot unloose. The cases of placenta prævia, as they are met with in practice, offer considerable varieties of kind, of degree of danger; they cannot be treated on one uniform plan. We are not in all cases of urgent hemorrhage to force the hand through the os uteri and extract the child; we are not in all cases to force the hand into the womb and detach the whole placenta. There are cases in which either of these operations is more dangerous than the flooding itself. Nor have I a panacea to offer in lieu of these operations. Although I believe that a full appreciation of the theory I have enounced is essential to the intelligent conduct of any given case of placenta prævia, I do not pretend that the particular mode of treatment which is the more direct deduction from this theory is universally applicable; but it supplies a new, an additional remedy, often applicable precisely when the usual modes of treatment are either impracticable or dangerous.

1. I shall adduce evidence to prove that dangerous, and even fatal, flooding may occur at so early a stage of labour that all methods of forced delivery are absolutely excluded.

2. That in another class of cases, in which it has been presumed that circumstances admitted of forced delivery, the operation itself proved dangerous, and even fatal.

The woman may die before delivery is practicable. Fatal hemorrhage may occur from a very small detachment of placenta, and before the os uteri has undergone any material dilatation. Thus, Professor Davis says "he had met with many examples of even fatal results of profuse uterine hemorrhage unaccompanied by any amount of dilatation of the orifice of the womb." ("Principles and Practice of Obstetric Medicine," p. 1040) Professor Hamilton says that "in the month of September, 1816, he was called to two cases where the patient seemed to be *in articulo mortis* from the deluge of the discharge, and where, nevertheless, the os uteri was obstinately rigid."

But, in the presence of even the most terrible flooding, we are warned in the most emphatic manner, even by those authors who advocate forced delivery as the only hope, against forcing the hand through the os before this structure is dilated or dilatable. Dr. Edward Rigby says: "In no case is it proper or safe to force delivery by artificially dilating the os uteri where it is contracted and unyielding; but *when the placenta is presenting it is peculiarly dangerous*, for even slight laceration of the os uteri will be followed by serious consequences; . . . . its vessels are immensely dilated, and large ones are ruptured which cannot be closed by the firmest contraction of the womb." Nægele has also proved that death has been caused by the continued hemorrhage proceeding from an os uteri so injured.

Dr. Collins records the following history:—

Case.—"There being no chance of life without speedy delivery, we determined to make the attempt, *although the parts were badly prepared.* The hand was cautiously introduced: . . . . great debility succeeded the operation, with a slight discharge of blood at intervals. . . . . On examining an hour after, a laceration of the neck of the uterus was discovered, commencing at its junction with the vagina. . . . . Dissection verified the result of the vaginal examination."

Taught, no doubt, by such instances, this excellent author emphatically says: "I know of no operation more truly dangerous both to mother and child than the artificial dilatation of the os uteri and turning the child."

Cases such as I have cited are by no means exceptional. Our clinical records teem with instances of resolute, I might say desperate, turning, with the view of saving the patient, where the operation, not the flooding, was shown to have caused her death. Let me quote one more, out of several, from that rich storehouse, the 'Clinical Midwifery' of Dr. Robert Lee (p. 158):—

Case.—"On the 22nd February, 1840, I examined the body of Mrs. C——. A great uterine hemorrhage had taken place spontaneously six weeks before, when she was seven months pregnant. Another took place on the 19th February, which continued till the evening of the 21st, when her medical attendant, *with some difficulty*, introduced the hand into the uterus, perforated a portion of the placenta, and turned the child. The head was extracted with difficulty. The placenta soon followed, but she soon after began to sink, and died in an hour and a half. There was an extensive laceration in the mucous and muscular coats of the cervix uteri, on the left side, and a smaller and more superficial rent on the right side. The placenta had adhered to the whole circumference of the cervix."

The following case, also from Dr. Lee, exemplifies in the strongest manner the proposition before us:—

Case.—A lady in the eighth-and-a-half month had been attacked with uterine hemorrhage a month before. Two other attacks, at intervals of several days, followed. "At one o'clock, Jan. 12th, 1839, the hemorrhage was renewed to an alarming extent, without any pain; about a quart of blood was suddenly lost, and she became extremely faint. At four a.m. the discharge still continued. . . . . The placenta was felt adhering all round to the neck of the uterus, which was thick and rigid and very little dilated. The effect produced by the hemorrhage was so great that *it was evident death would soon take place if the delivery were not speedily completed;* and the state of the orifice was such that it was certain the hand could not be passed but with the greatest difficulty. At eight p.m., Dr. Merriman saw her with us, and agreed that immediate delivery was necessary. I passed the right hand into the vagina, and insinuated my fingers between the uterus and placenta at the back part, and reached the membranes. But the rigidity of the orifice was so great that, though I employed great force for a considerable time, I could not succeed in getting the hand into the uterus. Dr.

Merriman recommended rupturing the membranes, and I was proceeding to do this with the fingers, when I felt one of the feet of the child, which I grasped, and brought down into the vagina, enveloped in the membranes, which then gave way. Nearly half an hour elapsed before the version could be completed, and when it was effected, the neck of the uterus grasped the neck of the child so firmly that I experienced the greatest difficulty in extracting the head. A great discharge of blood instantly followed. The placenta was removed, and every means employed to stop the hemorrhage; but the breathing became hurried, the extremities cold, and she died in less than an hour after delivery. Dr. Merriman informed me that a patient of his had actually died under similar circumstances before the head could be extracted."—(p. 156.)

If such are the lamentable results of forced delivery under desperate circumstances, what are the results of forced delivery under circumstances presumed to be favourable? The situation is still full of danger.

At p. 118 of Dr. Collins's book we find the following case:—

Case.—"D. C——, at her full time, was brought to hospital with profuse hemorrhage, the blood literally flowing away from her. Finding the pulse almost imperceptible, the os uteri being partially dilated and in a relaxed state, the hand was passed, and the child delivered by the feet. The hand was introduced immediately afterwards for the removal of the placenta; the uterus acted well, and expelled both. From the moment of her admission, cordials and stimulants were freely given, which, after delivery, were occasionally combined with opiates; notwithstanding which, as also the sedulous application of cold, pressure, &c., a slight discharge of blood continued, and she died in two hours. On dissection, the intestines were found completely blanched; the uterus was contracted to the ordinary size. On making a section of it, a rent was discovered in its mouth, which was evidently the cause of the continued draining. This injury, no doubt, occurred in the delivery of the child, although it was effected with great care, with no difficulty, and very little exertion."

I have no desire to pass over the fact, that in many cases the os uteri, undilated at the time, yields with tolerable facility before the hand, and admits of turning with safety; or another fact—one of great importance—that occasionally, through a happy coincidence of skill and chance, the feet of the child may be seized by two fingers, and turning performed without the necessity of passing the hand into the uterus at all. Neither of these fortunate occurrences can be counted upon. The voice of experience is loud as to the dangers of turning even when there is no placental presentation. It is decisive in the cases we are now considering.

We have, then, three formidable facts before us:—

1. The woman may die from flooding so early, before the dilatation of the os uteri, that forced delivery is out of the question.

2. If forced delivery be attempted before the os uteri is dilated, a fatal result is eminently threatening.

3. If forced delivery be performed when the os uteri is dilated, it may contract around the neck of the child; and even if it do not, such injury may be done to the womb in the extraction, that death may follow.

A remedy, then, is urgently required, to replace in certain cases, at least, forced delivery.—*Lancet*, *Aug.* 29, 1857, *p.* 212.

96.—LABOUR, WITH PERFECT OBLITERATION OF THE OS UTERI.

By Dr. R. G. Mayne, Leeds.

[In this case, though from the character of the pains and other appearances, the labour seemed in an advanced stage, no os uteri whatever could be discovered. Nothing but a smooth polished surface presented itself to the finger. Dr. Mayne considered this must be from the os being occluded by abnormal substance owing to inflammation, as the patient had experienced much pain in the womb during the early part of her pregnancy.]

I had no instrument with me but a lancet, and time did not allow of going or sending home for anything better, as the vertex, pressing powerfully on the highly stretched wall of the uterus, now reached the *labia pudendi* at every pain. I

wound a narrow strip of rag round the handle and joint of the lancet, to render it fixed; and, taking into my service the nurse, who, fortunately, was a young intelligent married woman, I instructed her (placed at the patient's back) to insert the fore and second fingers of her right hand behind the *fourchette* or posterior angle of the vulva, and keep back the parts during the next pain, so that I might *see* the actual state of the os, or of the adventitious substance by which it was hidden. This done, there was presented to view a quite smooth and continuous surface, the only distinctive indication discoverable being a slightly more livid hue of the new vascular formation which occupied the space of the natural aperture. I hastily pointed out this to the nurse, who, as well as she was able, marked the distinction. On recurrence of a pain, I made three or four scarifications with the lancet, all in the same line from right to left of the patient, producing an elliptical gap or separation in the new substance. I thus obtained partial admission of the point of my finger, with which I by degrees widened the opening to the extent of a shilling piece, distinctly perceiving that, in so doing, I had to *break down* what was more substantial than membrane—in fact, to the best of my judgment, was homogeneous with the *parenchyma* of the organ itself. I then ruptured the proper membranes: there was a considerable discharge of the waters, and everything went regularly on as in an ordinary case, but so rapidly that, within ten minutes from my using the lancet, a full-sized healthy female child was born; and no unfavourable circumstance has happened to mother or child to this time.—*British Medical Journal, Sept.* 5, 1857, *p.* 75.

97.—ON THE INDICATIONS FOR PUNCTURING THE MEMBRANES.

By Professor Ritgen.

1. *Puncturing the membranes during delivery.*—The object of puncturing the membranes, is to obtain a gradual discharge of the liquor amnii, with the intention of obviating some disadvantages that would accrue from leaving them to their natural rupture, or of fulfilling some obstetrical indication. The operation may, therefore, be either prophylactic or therapeutical.

(1.) *Prophylactic puncture of the membranes.*—As a general rule, when the cervix uteri is not occupied by the thicker portions of the child, the water becomes suddenly and completely discharged. The exceptions to this are rare, and cannot be foreseen. This may be often attended with ill consequences. Thus, (a) *prolapsus of the funis* may be brought about by the sudden rush of the waters. When the funis is felt presenting within the tense bladder of water, this is often burst during attempts at re-position, if the precaution has not been taken to discharge a portion of the waters by a more distant puncture. (b) *Admission of air within the uterus.*—Upon the rapid and complete discharge of the fluid, a sufficient vacuum may be produced to admit the external air to the uterus. This may give rise to great irritation, or even inflammation, of its interior, or may stimulate the child to premature inspiratory efforts. (c) *The removal of the pressure exerted by the liquor amnii upon the inner wall of the uterus* may be injurious in various ways. First, there is the dynamic effect exerted upon the uterus by the removal of the stimulus, the immediate result of which must be to enfeeble, or even relax and paralyse the organ, the capillary vessels being unable to resist the impulse of the blood, and hemorrhage ensuing. The opposite condition of increased irritability often soon succeeds to this. Next is the mechanical effect, one of the consequences of which is a diminution of the pressure upon the placenta, and the diminution of its resistance to the vascular impulse, whence also hemorrhage may arise. These consequences are the more likely to occur the larger the quantity of the water, and the greater consequent distension of the uterus, as in twins, &c. Too early a separation of the placenta with hemorrhage, is not of infrequent occurrence in cross-births. Another frequent ill effect of the discharge, is the loss of the ovoid form of the uterus, and the consequent disturbance of the progress of labour that takes place. The wall of the uterus is brought into immediate contact with the child's body, and irritation, cramp, or inflammation, may result. Gradually, too, by close application of the walls of the uterus the parts of the child become so surrounded that the progress of labour or the application of instruments

is seriously interfered with; and but too frequently fatal pressure is exerted upon the child, funis, or placenta. All these ill consequences may in most cases be prevented by the timely puncture of the membranes. When the membranes are thin and the water abundant, and irregular action is present, the membranes easily burst; and in such cases a puncture for the gradual discharge of the waters should be practised as soon as the state of the os will permit. The author usually employs a silver wire, having a smooth rounded point, and terminating at the other end in a ring, for the convenience of holding it. When not in use, it is kept in a catheter, and thus is always at hand.

(2.) *Therapeutical puncture of the membranes.*—The following circumstances furnish indications for this interference: (a) *Excessive distension of the uterus.*—When the uterus, containing a full-timed child, is unusually distended with liq. amnii, we should puncture as soon as the preliminary pains have sufficiently opened the os uteri. We have the above-mentioned inconveniences to obviate, and to secure a delivery free from the delays, interruptions, and other irregularities that may occur. When the distension is due to a plurality of children, when there is no reason for delay, the puncture should be made, in order to induce a gradual diminution of size, and a gradual expulsion of the child, the organ then gradually and gently adapting itself to the body of the second child; and if this last have not reached maturity, it may be retained yet longer in utero. Moreover, the occurrence of a cross position in the second child will in this way be frequently prevented; this being a consequence of the over-spaciousness of the uterus, and is often observed when the first child has been expelled by a few pains, before the capacity of the uterus becomes equably diminished. If the early puncture of the membranes be neglected, the premature separation of one or both placentas may take place, giving rise to hemorrhage, and necessitating the delivery of the second child. (b) *Cross position of the child.*—After a disquisition upon the influence which the positions of the mother may exert upon the production or prevention of this, the author goes on to state, that the tendency which prevails at the commencement of labour for its conversion into a breech or cephalic presentation, is much interfered with by the too sudden discharge of the waters, while it is favoured by their more gradual discharge. Puncturing the membranes, and keeping the patient upon the same side as that on which the head is found to be, has, in his hands, in a very great number of cases, prevented the necessity of turning at a later period of the case. (c) *General debility of the uterus.*—For the relief of a moderate degree of this, which is usually due to over distension, there is no better means than the puncture, the organ recovering its contractility under the gradual discharge of the waters. There is, however, met with in old worn-out pluriparæ a form of general debility of the uterus, attended with great relaxation, but unaccompanied with excess of liq. amnii. In these cases contraction should be obtained by means of spirituous embrocations, the administration of quinine and cubebs and the like, reserving the employment of the puncture, together with that of ergot, according to the indications which may be present at a later stage. (d) *Footling cases.*—The author has found these cases terminating either very rapidly or very slowly. In the first case the pains were powerful and rapid, and the soft parts yielding, the child being born in two or three pains after the sudden rupture of the membranes. In the other case, many hours may pass before the pains become powerful and the soft parts pliable, and the long sausage-formed membranes are long before they break. Here puncturing is indicated, so that the water may flow gradually away without the child being excited, as is often the case in foot presentations, to premature attempts at breathing. (e) *Partial debility of the uterus.*—This is especially observed as a relaxation of the lower and anterior portion of the uterus, which the adjacent abdominal parietes participating in, gives rise to the pendulous belly in advanced pregnancy. During labour the unrelaxed portions of the uterus thrust the child towards the relaxed portion, which has, during pregnancy, assumed more or less of the ampullar form. This, becoming enlarged during labour, the parts of the child are thrust in it above or in front of the pubes; and if the sac attains both great depth and breadth, the child may even assume a cross position within it. If it is very deep without being broad, the head usually sinks into it, while the shoulder or the arm may pass into the os uteri. Too *much liquor amnii, too* large a child, or the two together, may

increase it. The indication here is to restore the contractility of the weakened uterine parietes, as without this the labour will not proceed of itself. This is not to be done by the position of the patient, or by the application of pressure, which only adds to the mischief by inducing fatigue. Still less must we attempt the drawing forwards of the highly-placed os uteri by means of the finger, this only exciting the parts to partial excessive action. The application of the forceps is also here not only difficult, but improper. The worst of all is, however, when some urgency renders it necessary to finish the labour by turning. The os uteri opposes great difficulty to the entrance of the hand and the passage of the child, while the relaxed portion of the uterus exerts no expulsive power upon the portion of the child yet unborn. The finding and bringing down the feet, and turning the child, are also often very difficult. All these ill consequences are, for the most part, to be obviated by strengthening the relaxed portion of the uterus. The employment of bandages, stimulating embrocations, and general strengthening remedies must be commenced with during pregnancy, and continued during labour; and the puncture of the membranes should be resorted to as soon as the state of the os uteri will admit of it, very small doses of ergot also being given. Several days may, however, elapse before the restoration of the tone is effected. The patient should lie on one or the other side, the projecting portion being supported against the end of a round cushion. Sleep should be procured, and a nutritious, but not stimulating diet employed. The insensibility of the relaxed portion is gradually replaced by pains which may become severe, and the ampulla becomes smaller and tenser. The ergot is now discontinued, and may have to be replaced even by anodynes, while the stimulating applications are exchanged for emollient ones. Tepid injections of decoction of cicuta, milk, or oil, should be thrown into the vagina; and in a contracted, hard, or sensitive state of the vagina and os uteri, frictions, either of mercurial ointment alone or with extract of belladonna, should be employed. The above course of treatment Dr. Ritgen recommends as the result of a long-continued successful experience. If called to the case only after the membranes have largely ruptured, he recommends still the same course of procedure, making no attempt for the artificial extraction of the child, unless inflammatory action seems imminent. (f) *Uterine Cramps.*—If spasmodic pains set in early, and threaten a premature rupture of the membranes, it is best to anticipate this by the puncture, in order to prevent a larger rupture and a rapid discharge. (g) *Delayed expulsion of moles, with profuse hemorrhage.*—The puncture of the mole is an efficient means of shortening the expulsion and arresting the hemorrhage. In order to discharge the cavities of the mole repeated punctures may have to be made in various parts. Ergot and the plug may also be required; and when the hemorrhage is very profuse ice-cold water should be thrown far into the uterus. (h) *Premature separation of the placenta, and hemorrhage.*—Forcible delivery should be only had recourse to in cases of the extremest necessity; cold injections thrown high up between the membranes and the uterus, puncture, plugging, and the ergot being otherwise preferable. (i) *Placenta prævia.*—The arrest of the hemorrhage by means of the gradual discharge of the waters, has been long recommended in this case. (k) To the objection that a small puncture is of no avail in very *thick membranes*, the author replies that the punctures may be multiplied, or a thicker instrument employed. Too thick membranes may require for their spontaneous rupture such exertion from the uterus that may lead to its debility or its irritation, or may induce a separation of the placenta and hemorrhage. (l) *Cæsarian section.*—Prior to the performance of this operation it is of importance that the pains and consequent contractility of the uterus should be excited, so that the wound of the abdomen may be made as small as possible, and the uterus contract as soon as possible after the operation. If no urgency prevails, the gradual discharge of the waters by the puncture will best effect these objects.

2. *Artificial Premature Labour.*—Experience has shown our author that, as a general rule, the best means of inducing premature labour is the injection of almost hot water between the ovum and walls of the uterus; but where it is necessary to reduce as speedily as possible the circumference of the uterus, as where the mother is threatened with asphyxia, and when hemorrhage prevails, there is no means comparable to puncture.

3. *Rupturing the Membranes.*—The increase of the number of indications for puncturing the membranes lessens that of the cases in which their bursting is preferable. They must, however, be widely burst, (a) When it is necessary to employ instruments, or to introduce the hand; (b) When the child's respiration is impeded by being enveloped in them; (c) When, in the more or less complete absence of liquor amnii, the membranes do not break, but are closely applied to the presenting head, they should be ruptured as soon as the os uteri is wide enough. In this way rupture and separation of the placenta and tedious delay of labour may be prevented. (d) The narrow opening made by puncture may cause delay at a later stage of the labour, and should then be enlarged. (e) When the presenting part prevents the ready passage of the liquor amnii from behind it, and there is a tough projecting bag of membranes, the hastening of the labour, and preventing injury to the placenta, should be effected by a large rupture, the puncture being too slow in its operation. (f) For the delay of a too precipitate labour, it is sometimes useful to lay the patient on her side with raised buttock, to widely rupture the membranes, and to press the head somewhat backwards, so as to let as much water flow away as possible, and allow the close application of the womb to the parts of the child.—*Monatsch für Geburtsk—Med. Times and Gaz. July* 4, 1857 *p.* 13.

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98. ON METASTATIC AFTER-PAINS.

By Dr. Noggerath, New York.

[We know but little of the phenomenon called metastatic after-pains. Dr. John Power, of London, in his thesis on metastatic labour, has done much to lift the veil of obscurity from this and other similar phenomena.]

In order to give a correct idea of the so-called metastatic pains, we shall present some observations which will prove more instructive than pages of theoretical expositions.

Among the different cases noted by Dr. Power, we find in case 8 a marked instance of uterine metastasis upon the bladder:—Mrs. P., at the beginning of the labour, had genuine uterine contractions, which dilated the os uteri with sufficient rapidity, when we remarked that the pains became suddenly more distressing, though they had no longer their former influence upon the mouth of the uterus. Placing our hand upon the fundus uteri during a pain, we could not perceive any contractions at all, but the woman complained of a very painful sensation just above the symphisis pubis, which ceased after some time, and came back in regular intervals. Mrs. P. had not evacuated her bladder for a considerable time, and was prevented from doing so by the pressure of the head against the symphisis pubis. We considered this a case of metastatic pains in the bladder, produced by an irritation of this organ, arising from its being overloaded with urine, and the vain attempts to empty itself. We therefor introduced the catcher, and drew off a considerable quantity of water. This being performed, regular uterine contractions set in, and labour was soon ended in the most satisfactory manner. Prof. Stein gives, among other very interesting cases, one of metastasis to a part of the nervous system, which is quite removed from the sphere of the uterine nerves. He says, "In this case a great quantity of liquor amnii was present, and, in consequence, the pains were very irregular. Suddenly, all uterine action ceased, and the woman was taken with a violent facial neuralgia. This affection lasted for one hour, when it gave entirely away, and another succession of labour pains set in; these, after some time, ceased, and the prosopalgia commenced, which was exchanged once more for activity of the womb, and so on by turns. At length the membranes were ruptured; after which, regular uterine action began and continued till the child was born."

Another very singular case was observed by the same author. A woman, when at the full term of her confinement, was taken with general convulsions, which ceased suddenly, but continued in the musculus orbicularis of both eyes, so that she could not open them for two days. Now the womb began its work, and with the first contraction her sight was reestablished.

Many of the authors above mentioned, and especially Pilger, observed that,

during a confinement, the pains gave way, and the patient was suddenly taken with an alarming dyspnœa, which ceased as soon as another contraction of the uterus commenced. Others witnessed that the abdominal muscles were the seat of metastatic labour. (Power, Herder.)

This kind of dystochia is of rare occurrence. But there is another very severe and most tormenting affection occurring after confinement, which we find mentioned in almost every treatise on midwifery, yet vainly seek for an explanation of the fact. I mean those very painful affections of the lower extremities, which commence a few hours after the child is born, and last sometimes for two or even eight days. The authors who treat of the said affection, call it "*the crural neuralgia of women in childbed*," and believe it to be the result of pressure of the fœtal head, or the forceps, or of an inflammatory exudation upon the crural nerves as they pass through the pelvis. I will not deny that this is the case in a few instances. But when these pains follow after an *easy* confinement, where neither a large-sized head, nor a forceps operation, nor an inflammation of the bowels can be referred to as explaining this symptom, then we have to seek for another explanation.

[The author has had several cases under his observation, which have exhibited this curious phenomenon. In one remarkable case, the pains began to come on about nine hours after delivery of a living full-grown child.]

This morning, at about seven o'clock, the right thigh was suddenly seized with a pain, which soon increased to such violence, nay, fury, that the patient was afraid to move the leg the slightest degree from its position. The lower part of the thigh was the seat of the greatest pain, and especially its external surface extending over the dorsum pedis. The least pressure could not be endured. After the child was born, the woman had not the slightest perception of after-pains. She felt as if her *abdomen was empty*, or rather *not existing*. The uterus was enormously distended, its limit or outlines being scarcely distinguishable, texture remarkably soft and relaxed. Considering this to be a case of metastatic after-pains, I thought the chief indication would be to bring on uterine activity, after which the pain in the thigh should disappear. The result of my treatment proved that I was right.

Shortly after ten o'clock I gave her a large teaspoonful of powdered ergot of rye (secale cornutum). Ten minutes past, the patient remarked a discharge of blood from the vagina, the first after her delivery; a quarter of an hour after the administration of this remedy, the woman became more quiet, she ceased to cry, except occasionally, and a painful expression was noticed in her features. Twenty minutes past ten o'clock she said that the former kind of pain had left her thigh and yielded to a very bearable sensation of smarting. At half-past ten o'clock she took the same quantity of ergot, and fifteen minutes later I had the pleasure to see that the patient moved to lie upon her right side; she could bend her knee and move her leg up and down; she even told me now that she *had not the least pain*. When I left her (before eleven o'clock) I could ascertain that the uterus was well contracted, lessened in size, and considerably harder than when I made the first examination. The woman had no relapse afterwards.

[In the second case the labour, though somewhat tedious, was also safely conducted.]

When I left the woman she felt quite well. The following morning I was called to see her; found her crying out with a violent pain in the lower part of the right thigh. Upon my inquiries, I was answered that, at about half-past eleven o'clock last night, she was suddenly awakened by a kind of straining sensation in her leg, which soon increased to such a distressing painfulness that she was unable to sleep for the rest of the night. Listening to her exclamations, I could easily observe how the painful affection came on slowly, increased gradually, and sunk to a perfect intermission. *She did not feel anything like after-pains*, though she knew this sensation very well from her previous confinements. At eight o'clock in the morning, when she began to nurse her child, the pains, which sometimes affected the left thigh, had somewhat lessened. I could detect no pathological symptom in the affected leg; occasionally I remarked a starting of some muscle, very much like a subsultus tendinum.

But the uterus proved to be very different in form and size from what it was

last night, when I left the woman. This organ was much larger, of a more spherical conformation, its texture extremely tender and soft to the touch, so that at first it was scarcely possible to discover its figure through the abdominal walls, though they were thin and collapsed. Its vitality was so much lowered, that hard pressure upon it, which caused so much pain last night, was now scarcely perceived. Ordered—

℞. Secal. cornut., recent. pulverat. ʒi.; infus. c. aqu. fervid ad cal. ʒiij.; add syrup zingib. ʒi.; one table-spoonful to be taken every half hour.

When I saw her again, at about six o'clock, p.m., she told me that after taking the medicine she felt much relieved, and that at four o'clock, p.m., the pains in her legs had ceased entirely, adding, that she felt them at present more in her back and stomach.

In both these cases, especially in the first one, it is obvious how important it was to have a right idea of the disease in order to adopt the proper treatment. While this patient, on a former occasion, suffered for *five days* from her so-called neuralgia, we were able to remove it entirely in *one hour and a half*.

The latter case is very interesting in regard to the course and diagnosis of the disease. The woman exhibited already symptoms of atonia uteri during her actual labour, and this state continued after confinement. The uterus was in a perfect state of rest as regards both its sensitive and motive power. A part of the nervous activity, properly belonging to the uterine system, became free, and consequently was added to the natural amount of nervous tension in some other part; and, in this instance, the nerves going to the right thigh, had to bear its influence. Every one knows that irritation of the mammæ reflects upon the uterus as a stimulus, i.e., brings its nerves into greater activity. Therefore, nursing the child, was to rouse the uterine nerves from their inactivity, and this ought to diminish the pains in the leg. This fact was observed in our case, as the woman told us herself without even being asked about it.

In explanation of these singular pathological occurrences, we must bear in mind, that there is always present a limited amount of nervous power in the central organs. Therefore, if one part of the body receives a nervous impulse in excess, other organs must be more or less deprived of it; or, when there is prepared in the nervous centres a certain amount of material for the purpose of setting one department of nerves into action, and this department being in itself not properly disposed to receive it, then, another portion of the nerves must attract this amount, and show a greater activity. The same result must happen, when some other part of the system is in such an unnatural condition, that it attracts more nervous force from the centres than is due to it. In this case another organ must lose part of its activity.

These principles applied to the uterine system, we are able to explain the pathology of metastatic pains. When labour begins, the sympathetic nerves and the spinal cord secondarily are called to a physiological energy, which is seen in no other instance of life. Their activity is provoked by the uterus, and in ordinary circumstances directed to the uterus. But in order to perform their duties properly, the womb must be sufficiently disposed to attract the nervous fluid to its own sphere. In case of its being in a state of weakness, other organs receive the effect of the overloaded centres, and thus exhibit the phenomenon of metastatic pains. Therefore this complaint is most commonly observed in connection with atonic labour-pains. But if some part or other of the system was previously, or during parturition, in an unhealthy condition, it would be liable to attract to itself the nervous energy originally due to the uterus, even if the latter was in a state of health. Therefore, we see that, in very many instances of metastasis, the affected organs stood under some morbid influence before or during confinement.

I lately was confirmed in these views of metastasis by a case which I observed in this city in September last. Before relating the case it will be necessary to make some explanatory remarks. It cannot be doubted that, in the central organs of a healthy person, there is always sufficient electricity to maintain a medium state of tension in all the nervous cords, both motive and sensitive, going to the different parts of the body. This amount of central irritation is present nearly to its full extent even if one of the more important organs is in a tempo-

rary state of physiological activity, such as the brain in thinking, the stomach in digesting, the uterus in delivery, &c., &c., but if the above views of disturbances in the nervous equilibrium are correct, it must happen sometimes, when one of these organs, being engaged in physiological action, is in a state of excessive irritability during its work, that the amount of specific central energy is not sufficient to answer the requirements of the stimulated organ, and then another part of the system will be partially deprived of its physiological activity.

This was the case in the following instance. In September last, I assisted a lady of New York in her confinement, which went on so rapidly, that labour was nearly completed when I arrived, though I obeyed the call immediately; all I had to do, was to remove the afterbirth. This was her sixth confinement, and on nearly all former occasions she had to suffer from most distressing after-pains; she asked my advice in order to be relieved from that complaint. At about two o'clock, P.M., I was called again to see her. She complained especially about her right leg, so that at first I anticipated having another case of metastatic after-pains. In this I was deceived after a closer examination. It was just the reverse. For she suffered, at the same time, from unusually strong after-pains. The uterus was small, contracted, and hard as a stone. In the right leg she had the sensation "*as if it did not belong to herself;*" it felt benumbed and heavy; she had not the power of moving it. When I touched it she was unable to tell at what place exactly this was done. In short, it exhibited appearances which, in all, were most akin to paralysis. I prescribed a few doses of laudanum and ipecac, which relieved her greatly, and as the after-pains gradually subsided, the limb returned to its natural sensation and mobility.

This case related by itself would be a perfect puzzle to everybody. It can only be understood by comparing it with the above narrated cases of metastatic after-pains, and thus it becomes a key to the right explanation of this intensely interesting phenomenon.—*New York Journal of Medicine, May*, 1857, *p.* 287.

99.—ON PUERPERAL FEVER.

By Dr. Edward William Murphy, A.M., Professor of Midwifery, University College, London.

The symptoms of this disease have been so accurately described by numerous authors, that it is only necessary to refer to such of them as will explain the principles of treatment. Every author has noticed varieties in the mode of its attack. Vomiting is sometimes the first symptom, or it may begin with diarrhœa; more frequently a rigor, followed by a violent shooting pain through the epigastrium, ushers in the attack, and this is followed by swelling and extreme tenderness of the abdomen. Lastly, there are cases more progressive, in which tenderness is first observed in the neighbourhood of the uterus, extends to the abdomen, is accompanied by a firm, wiry pulse (never the case in the former instances), and presents many of the characters of true peritonitis; the bowels are constipated, and vomiting occurs at a later period.

The manner in which the constitution is first affected by this poison is of importance as a guide to treatment. Douleet thus discovered the value of emetics. He observed in his cases, that vomiting was a first and most urgent symptom, and, so far from checking this, he sought means to promote what appeared to him a natural effort to throw off the disease. His ipecacuanha emetics had the most marked success. The same treatment was tried by others, and failed altogether because the epidemic was of a different character.

Gordon, Hey, Armstrong, and Mackintosh, observed in their cases a rigor followed by the greatest prostration; nevertheless, they boldly employed the largest depletion, and saved their patients. Gooch met with cases of a different kind, in which true peritonitis was a more prominent feature; he found a more moderate bloodletting, together with local depletion, equally serviceable; and lastly describes another subsequent epidemic, in which bleeding killed his patients. This difference can only be explained by assuming a difference in the manner of the attack. Gordon's cases differed from Gooch's in the extent to which the poison was absorbed; while the cases in Gooch's first and second epidemic differ from

each other so completely, as to lead to the doubt whether the latter was puerperal fever at all.

This difference in the mode of attack will perhaps also explain the cause of success in the various remedies employed, each of them claiming the most marked success, and each of them quite different in their actions. The moment this poison is absorbed, an effort is made to get rid of it through the ordinary channels: hence the vomiting and purging; the effort generally fails, and poisoned blood accumulates at the centres of the circulation, causing a rigor of greater or less severity. The skin, and I believe also the kidneys are excited to remove the poison from the blood. The practitioner who aids this effort succeeds: thus Doulcet succeeded with ipecacuanha; Denman with tartar emetic; Boer with Kermes' mineral; Armstrong with salts and senna. I have been informed also of the value of nitrate of potash as a diuretic in some forms of this malady; but when the effort failed, and a rigor gave evidence of the accumulation of poisoned blood at the central vessels, Gordon and Hey relieved this at once by taking twenty or thirty ounces of blood, and succeeded in a sufficient number of cases to prove the correctness of their practice and the nature of the disease. Depletion to such a large extent could not be explained on the principle of combating peritonitis; but is intelligible as relieving the liver, spleen, and central organs from the mass of poisoned blood. When so employed, it should immediately follow the rigor, because, if time is lost, nervous power is paralyzed, and the very same treatment only hastens dissolution.

Another class of remedies has also been warmly advocated, and has met with considerable success. Many years ago, Dr. Brenan, of Dublin, used oil of turpentine both internally and externally with great advantage. Dr. Copland approves of this practice, and from his experience of a severe epidemic in the Queen Charlotte's Hospital, he came to the conclusion that "there is certainly no remedy so efficacious as a decided and judicious use of spirits of turpentine."

Dr. Copland also found camphor in doses of from eight to sixteen grains extremely serviceable. These remedies are altogether different in their character and in their action from the former; they are not only stimulant, but anæsthetic; both are hydrocarbons, and possess the common properties of these bases; they are useful, not merely in stimulating the constitution against the attack, but by diminishing pain they lessen nervous exhaustion. Nothing relieves the extreme tenderness of the abdomen so much as turpentine fomentation; taken internally, it relieves the tormina of flatus. Camphor also assuages the intensity of neuralgic pains. Reasoning upon these facts, it seemed probable that chloric ether might be serviceable, at least in relieving pain: the following case will explain its effect:—

In 1855 I was called to see a woman who had been seized the day before with puerperal fever. She was lying on the bed with her knees drawn up; the abdomen distended and extremely painful; the extremities cold; and pulse, 150. I did not think she would live till the next day, and ordered thirty minims of chloric ether with twenty minims of tincture of opium every second hour, merely to give some relief to the intensity of her suffering.

The following day I found that the pain had been completely removed, and she was comparatively comfortable; but there was no change in the pulse. She, however, rallied so far as to continue in this easy state for nearly a week; but the poison had done its work, the vital powers could not recover themselves, and she sank after this protracted struggle.

Very lately two other cases came under my notice. In the first, the woman had been two days ill. She was propped up in the bed, suffering intense pain, and gasping with painful respirations; the same means gave her immediate relief; but she was too far gone to have any hope of saving her. In the second case, this treatment was carried out so successfully that the woman recovered. I am, therefore, strongly inclined to the opinion, that anæsthetics would be found most useful agents in aid of other remedies. They cannot be depended upon alone, because pain may be relieved, and the disease still makes its progress; but that relief greatly assists any means which may be used to combat this malady.

General rules for the treatment of puerperal fever can scarcely be laid down, so much depends upon the character of the epidemic and the quantity of the poison

absorbed. If the dose be a maximum, it it impossible to save the patient; if in such quantity that the constitution can make an effort to get rid of it, much of our success will depend upon a close observation of the manner in which the effort is made: and it is here that promptitude is attended with so much success. Prompt depletion immediately after a rigor has saved many a patient; emetics, purgatives, diaphoretics, and even diuretics, have proved their value when given with promptitude and decision. Depletion has had the most success, because, in the majority of cases, a rigor is a well-marked and early symptom. If the dose be a minimum, just sufficient to excite peritonitis or phlebitis, the treatment must be directed to subdue these inflammations, and the danger consists in the nature of the tissue inflamed. Such cases are met with in hospitals on the decline of the epidemic, or are scattered through a district on the outskirts, as it were, of the poison.

Those authors who have adopted the term "puerperal fever," have made classifications of its varieties. Tonelle describes the inflammatory, adynamic, ataxic forms; Ferguson, the peritoneal, gastro-enteric, and nervous fevers; Gooch, the inflammatory and typhoid: but these terms only signify degrees in the dose of the poison, not any essential difference in the fever itself; and the remedies to meet these several conditions are successful in proportion as they remove or neutralize the poison absorbed, or support the constitution against its influence.

The prophylaxis of this malady is a question of even more importance than its treatment. The means of arresting its progress, or expelling it from a locality, may save many lives; the best directed treatment has sometimes scarcely saved one life in ten. In this, as in other taxemic diseases, *ventilation* plays an important part; and much of the mischief caused by this scourge has arisen from our ignorance of the principles of ventilation. The continental hospitals are remarkable instances of neglect of these principles; their mortality varies from 1 in 13 to 1 in 20, chiefly in consequence of puerperal fever, the result of imperfect ventilation. Until lately, our own hospitals were liable to a similar objection; but the General Lying-in Hospital in the York-road, built on the marsh of the Thames, is an evidence of the value of an improved knowledge of this subject. The puerperal fever which so often poisoned its wards is, I believe, now totally expelled.

Another very fertile source for the production of animal poisons is, bad or imperfect drainage, which may baffle the best directed ventilation. *The sewerage* of the metropolis is now becoming the subject of animated discussions; and we have learned that there are a multitude of cesspools carrying on their "fæcal fermentations" with an activity which the best ventilation could not remove. It is not surprising, therefore, that puerperal fever should be found scattered through London, even in houses where one could hardly expect it. It is to be hoped that the attention now given to this subject will be the means of destroying such a source of infection. But something more is required than emptying cesspools. It is equally important that the putrescency removed be not brought back again. Some years ago a part of the Edgeware-road was under repair, and a quantity of Thames mud was laid as a foundation for the pavement. In three days afterwards, five cases of cholera occurred in that district; and if there had been any cases of labour, puerperal fever might as easily have been produced, to spread through the neighbourhood. A law is required to regulate the movements of certain manufacturers, builders, and paviors, lest they undo what the public are endeavouring to accomplish. Nay, we would venture to hint that such a law might be of great value if it prevented a more important personage establishing a gigantic cesspool at Erith, where fæcal fermentations may be carried out on a scale of sufficient magnitude to bring back the plague itself. Several methods have been proposed for overcoming this difficulty, but there is one which, in a medical point of view, I think well worthy of attention. Mr. Dovor has discovered a process of deodorization, which I have witnessed, and have been surprised at the result. By this method the refuse of the most offensive sink has been rendered perfectly devoid of either smell or taste; the stinking sewerage has been converted into water nearly pure, and a residuum perfectly inodorous, but still valuable as manure. The agents employed by Mr. Dovor are hydrochloric acid, proto-sulphate of iron, and chloride of sodium: proto-sulphate of iron, because it is the best salt for fixing ammonia; and chloride of sodium, because of its chlorine. With the same

object, Sir William Burnett and Mr. Morell have used concentrated solutions of chloride of zinc as disinfecting agents.

Chlorine is well worthy of attention as a prophylactic; its powers as a disinfectant had been known long before this experimental proof of its efficacy. When Dr. Collins was appointed Master of the Dublin Lying-in Hospital, puerperal fever was rife; he expelled it completely by the extreme strictness with which cleanliness and *chlorine fumigations* were carried out. Each lying in ward, the moment it was empty, underwent a process of fumigation and cleansing, which continued for a fortnight, when it was opened again for patients. The result was, that of 10,785 patients delivered in the hospital, only 58 died, which is nearly in the proportion of 1 in 186: the lowest mortality, perhaps, on record in an equal number of a similar class of females.

Dr. Semelweiss has proved its value in the Vienna hospital, where from 250 to 300 women are delivered monthly. The wards are arranged in two divisions. (In the first, about thirty medical students and eight midwives attend; in the second division there are twenty-eight midwives, and no students. The mortality in the first division varied from 30 to 70 per month; while that in the second (the midwives' department) was only from 7 to 9 per month. In one year, the mortality in the first division varied from 30 to 70 per month; while in the midwives' department it was only from 4 to 7 per month. In one year the mortality in the first division amounted to 500! while, in the worst period, it did not exceed 40 in the second division. Dr. Semelweiss was at a loss to explain this extraordinary difference; he could not admit superiority of skill in the comparatively ignorant midwives: the only difference he could think of between them was, the dead-room. The students were always making post-mortem examinations; the midwives never entered it. He assumed from these facts that the cadaveric contagion was communicated to the lying-in women, and excited puerperal fever. With this conviction, he employed *chlorine* as a disinfectant. Students in attendance on patients were required not to handle dead animal matter. Those who had done so were not allowed to examine patients until the following day, and, before doing so, were obliged to wash their hands, *and especially their nails*, in a solution of chlorine. Dr. Semelweiss was gratified to find that by this means he arrested the disease; the mortality fell at once to 7 per month, the same as in the midwives' division.

These facts prove that chlorine is not only a deodorizer, but a disinfectant, and suggest some important questions. Is smell a proof of the vitality of a poison? If the smell be removed, is the poison destroyed? Every dissecting-room student knows the tenacity of the cadaveric effluvia. Washing will not remove the smell of his occupation from his hands; he uses every precaution lest his habiliments should betray him; the ammoniacal odour, if he is not cautious, may accompany him in his amusements as well as in his studies; he, therefore, employs every means in his power to avert such a catastrophe: hence the value of chlorine, which Dr. Semelweiss has proved destroys equally the odour and the poison.

Dr. Dovor finds chlorine valuable as a deodorizing agent; and, as it is also used as a disinfectant, we may assume that if putrid effluvia be destroyed, the poison to which it belongs becomes inert. If this view be correct, it has a very important relation to puerperal fever, because it is always accompanied by a peculiar odour. The effluvia of the lying-in ward is well known to those who attend lying-in hospitals; but the odour of puerperal fever is different: it is faintly acid, very difficult to describe, but easily recognised by those who are accustomed to the disease. I believe that it is equally tenacious as the cadaveric odour, and will accompany the practitioner unless he is strictly on his guard against it. Chlorine will destroy this effluvia; does it destroy the poison producing it? If so, may it not be used internally, as well as externally? Hydrochloric acid, chlorate of potash, chloride of sodium, as a purgative, are at least worth a trial. I offer these suggestions with diffidence, because I have not yet had an opportunity of testing them by experiment.

Anæsthetics are agents which seem to have a prophylactic power. Drunkards are less under the influence of poisons, because the susceptibilities of the nervous system being blunted, as it were, by their potations, the activity of the absorbents is proportionately diminished. On this principle, chloroform, so far from being a

cause of puerperal fever, seems to me a preventive; and if this scourge were raging in a district, or decimating an hospital, I should certainly take advantage of its power, as a security against the attack.

In the review which has been made of this perplexed subject, the object has been to remove from it what seemed unnecessary difficulties, caused by the terms employed to designate this disease. The correctness of naming it an inflammation of one or other of the tissues engaged was questioned, because such inflammations were only accidents, which may or may not be present, and do not constitute the essential character of the malady. Hence, the correct principle of treatment is, the employment of such means as will remove or destroy a poison, not such as are intended to combat an inflammation.

Lastly. At the present time, when so much attention is given to sanitary measures,—when the old bills of mortality have been succeeded by a most valuable system of registration,—it seems to be a very grave error to call a morbid poison by a wrong name; and if in their returns the profession send in cases of puerperal fever under the names of "peritonitis," "phlebitis," "arthritis," they not only deceive themselves, but the public. Those precautions which are necessary when poisons are present are neglected, because it is believed to be, and is called, a simple inflammation; and it is only when the so-called inflammations are flying from house to house or from bed to bed, that alarm is taken,—just when it is too late. The Registrar-General receives a return unintentionally false, and puerperal fever may be raging in a district where the name is never heard: but the period is remarkable, because of the number of post-partum inflammations which have had a fatal termination.—*Dublin Quarterly Journal, Aug.*, 1857, *p.* 23.

100.—*On the Employment of Electricity in the Suppression of the Lacteal Secretion.*—M. Becquerel, in a late communication to the Société Médicale des Hôpitaux de Paris, has made some remarks upon the influence of electricity in restoring the secretion of milk. His attention was called to the subject by a case related to him by M. Aubert, who had employed electricity in the case of a young woman whose milk had been suppressed in consequence of a double pneumonia. The electricity was applied to the breasts by means of moist excitors, and after four applications, each lasting twenty minutes, the lacteal secretion was completely restored. M. Becquerel was at first incredulous as to the reality of the result; but the following case, which fell under his observation, removed his doubts:

A young woman, aged twenty-seven, well formed, although of a nervous temperament, had suckled a young infant for six months, but, on the occasion of some intense and often-repeated mental emotions, the lacteal secretion diminished considerably; the right breast retained a little milk, but the left was almost completely dried up. M. Becquerel applied the electrical current at first to the left breast, placing the moist excitors, made of sponge, successively in the different points of the circumference of the breast, so that the currents might traverse the organ in all directions. Three applications were made, each lasting a quarter of an hour. The patient suffered very little, and indeed experienced little more than a feeling of inconvenience. From the time of the first application, the rush of milk supervened almost immediately after the application of the electrical currents. After the third application, the secretion was full and entire; the child had taken the breast, and the milk was abundant in the left breast, and sufficient in the right to obviate the necessity of applying the electricity on that side.—*British and For. Med.-Chirurgical Review, July*, 1857, *p.* 254.

101.—DR. GOOLDEN'S ABORTIVE TREATMENT OF MILK ABSCESS.

By E. U. Berry, Esq., Covent Garden.

[The author has found this valuable mode of treatment eminently successful; he gives two cases in illustration. Dr. Goolden's paper will be found at p. 254 of Vol. xxxiv. of this Retrospect.]

Case 1.—M. S——, confined of her first child in December, 1856. According to her reckoning and the appearance of the infant at its birth, the labour was premature. On the third day the breasts were swollen, hard, tender, throbbing, and red; the superficial veins enlarged, with feeling of great distension. The nipples were retracted and cracked, and the child was too feeble to suck, even if the nipples had been more prominent. The milk partially oozed away, and a little was drawn by means of a breast-pump, but not enough to produce any sensible diminution of their bulk; besides which, the abortive efforts were attended with the greatest suffering. There was fever, anxiety of countenance, and depression of mind; as she had a great dread of a "bad breast." This was evidently one of those cases that must inevitably result in abscess, unless something more than the ordinary remedies were resorted to. I gave directions to paint the areolæ and nipples with extract of belladonna, and to take a saline mixture with half-drachm doses of colchicum every six hours. Upon visiting her on the following day I was as much gratified as surprised at the result of the treatment. The fever had entirely disappeared; the breasts were quite soft; the *milk had flowed away in great abundance* into a bread and water poultice; a cheerful expression of countenance was exchanged for the former one of anxiety and dread; and all apprehension of evil had disappeared. I ordered the mixture to be omitted, but to continue the local application. The case required no further treatment, and she was "about" in the course of a few days.

Case 2.—A. S——, three days after her confinement (January, 1857), began to suffer great pain in the nipples when the child attempted to suck. Shields, unguents, nitrate of silver, were applied, with but temporary relief. At length the agony was so great, that it was determined to abandon all further attempts at suckling. The nipples were deeply ulcerated, and the breasts began to exhibit the usual symptoms of inflammation from lacteal engorgement. I directed the extract of belladonna to be applied, and with the same happy results as in the former case; the bread-and-water poultice being saturated with the escaping secretion, and all inflammatory excitement subsiding in a remarkably short space of time.

In the cases related by Dr. Goolden, the belladonna, with the internal administration of colchicum, appeared to have had the effect of arresting the secretion of the milk. In the case above detailed it is seen that the milk *flowed away abundantly*, and that the mother was enabled to continue lactation shortly after the application. Its beneficial effect in subduing the inflammation seems to me to admit of an easy explanation. The long-recognised power which this drug is known to possess of relaxing muscular contraction, at once suggests the *modus operandi* in these cases. I do not know if a sphincter has yet been demonstrated at the exit of the lactiferous ducts, but that the ducts are themselves muscular is well known; and the belladonna, by relaxing the muscles (or sphincters, if there be such), allows the cause of the inflammation—the accumulated secretion, to pass away readily, when the inflammatory symptoms and the accompanying fever rapidly subside.

Doubtless, any of the active forms of belladonna would answer the purpose equally well with the extract; such as a solution of its active principle, atropine. I do not, however, think that the choice of the form is altogether a matter of indifference. The latter is undoubtedly more elegant, and I dare say would be more speedy in its effect; but the extract, from its being a messy and unsightly application, is much more likely to be carefully washed off, so as not to be injurious to the infant when replaced at the breast.—*Lancet, June* 6, 1857, *p.* 592.

102.—*Artificial Maternal Milk.*—The following remarks are from an interesting paper lately read at the Harveian Society by Mr. Lobb:—"There are objections besides that of adulteration to the use of cow's milk for infants, although pure.

"In comparing the constituents of these (maternal milk, cow's milk, and ass's milk, as given in the subjoined table), it will be perceived that the maternal milk contains less than half the amount of curd that is found in cow's milk, and a little more than ass's—a little less butter than cow's, and an excess over the

Constituents of	Maternal milk.	Cow's milk.	Ass's milk.
Caseine or curd,	2·02	4·48	1·82
Butter,	3·05	3·13	1·11
Lactine or sugar of milk,	6·50	4·77	5·08
Salts, Lactate of soda, Chloride of potassium, Phosphate of lime, iron, &c.,	45	60	34
Water,	87·98	87·02	90·65
	100·00	100·00	100·00

ass's—more sugar than ass's and a good deal more than cow's—the salts do not vary so greatly in amount, and the water a little more than cow's, but considerably less than ass's. By adding two and a half per cent. of cream to ass's milk, a very good substitute for the maternal milk would be procured with great ease, but ass's milk is so expensive in London that it would remove such a preparation entirely beyond the reach of the poor, whom I desire to benefit equally with the affluent. By removing a portion of curd from cow's milk, and adding sugar of milk, a cheap and excellent substitute can be obtained."—*Med. Times and Gazette, July* 25, 1857, *p.* 103.

103.—PROLAPSUS OF THE UTERUS—PLASTIC OPERATION.

By Prof. Fergusson, F.R.S., &c.

[In this case, which occurred at King's College Hospital, there was rather a departure from the usual plan pursued.]

The patient on whom the operation was performed was about forty-five years of age, rather reduced in flesh, in consequence of having suffered severely for about three years from prolapsus of the uterus and bladder of an aggravated character. The organs when down formed a tumour about the size and shape of a large cocoa-nut, which hung down between the thighs. There was considerable hypertrophy of the uterus, and some excoriation was observable on the posterior part of the neck; the bladder could be distinctly felt on the anterior part of the tumour, just under the pubes.

The patient having been put under the influence of chloroform by Dr. Snow, Mr. Fergusson smeared the surface of the tumour with lard and returned it to its normal position. He then made the usual horse-shoe denudation, and having secured all the arterial branches that appeared to require it, he brought the denuded surfaces together by means of the common interrupted suture, instead of the quill suture which we have hitherto seen him use. The parts were dressed in the usual way, and the patient was then removed to the ward.

Mr. Fergusson remarked, that, having found some inconvenience from the pressure of the quill suture in such cases inducing a disposition to sloughing of the edges of the wound, he had tried the common interrupted suture in a previous case, and found it to answer the purpose perfectly; adhesion had taken place without the slightest difficulty, and in a comparatively short time. It was not easy, he said, to ascertain the exact amount of pressure exerted by the quill suture, and if it was too great it had the effect of strangulating, in some measure, the parts included, and thus producing a disposition to sloughing. The fact also, of being more accustomed to the dressing and management of wounds treated by interrupted suture, might also have some effect in producing the favourable result which had followed it in the case alluded to. It might be thought that there would be some difficulty in bringing the denuded surfaces perfectly together by

this suture, but this was not the case; for although the wound appeared to gape very much as the patient lay on the operating table with the thighs separated, the raw surfaces were easily brought in contact, owing to the great elasticity of the parts, and when the thighs were brought together after the operation, there was not the slightest tension exerted on them, and they could be kept in perfect apposition.

The plan thus adopted greatly simplifies this important operation, which has proved so efficacious in relieving this distressing complaint; and from the success hitherto attending it, in the hands of those who have practised it, there is no doubt it will become very general. He (Mr. Fergusson) had operated on eight cases within a short period, and they had all been perfectly successful; many of them were cases of a severe character, which had rendered the lives of the unfortunate sufferers perfectly miserable.—*Medical Circular, Sept.* 9, 1857, *p.* 128.

104.—REPORT OF A CASE OF VESICO-VAGINAL FISTULA.

By Dr. J. H. Sawyer, Professor of Midwifery to the Original School of Medicine, Peter Street, Dublin.

[The subject of this case was a young woman who had been delivered with Churchill's forceps, the head of the child having remained stationary upwards of nineteen hours. About the fifth day after the operation, incontinence of urine set in. The formation of a vesico-vaginal fistula was ascertained, but as her general health was impaired, she was directed to try change of air, and return to the hospital after two or three weeks' sojourn in the country.]

She was re-admitted on the 1st of July, and, on examination, a transverse oval aperture was ascertained immediately above the neck of the bladder, through the vesico-vaginal septum; it measured eight lines in long diameter, and the finger could be readily passed into the cavity of the bladder. The narrowed condition of the vagina, combined with the soreness resulting from the extensive excoriation, made the examination very difficult. The patient complained that the moment she turned in the bed, or assumed the erect posture, the urine flowed away. She said her life was miserable, that she was offensive to others, and unable to earn her subsistence, and would gladly submit to any operation. Various attempts were made to relieve the extreme sensibility of the parts. Carbonic acid gas (as suggested by Dr. Simpson) was injected, and the vapour of chloroform, through Dr. Hardy's chloroform bellows; but instead of diminishing the soreness, such aggravated suffering, with increased contraction of vagina, was induced, that I was compelled to postpone the operation from the 15th to the 25th. Two days prior to that date I cautiously dilated the vagina with plugs of prepared sponge, smeared with extract of belladonna, which proved an admirable anæsthetic.

Having previously cleared out the bowels, I secured her in the position for lithotomy, and proceeded to operate in the presence of Drs. Montgomery, M'Clintock, Churchill, Ringland, and Mr. Maurice Collis. It had been intended to use chloroform; but after a few inspirations, the sudden irregularity of the heart's action compelled us to desist. Two dilators were first introduced, and pressed obliquely upwards and outwards. The third pressing down on the recto-vaginal septum, enabled me to get a good view of the fistula. A full-sized catheter passed through the urethra, and pressed downwards and forwards, kept firm the posterior margin of the aperture and prevented the bladder from coming in contact with the knife. With a long-handled, double-edged knife I carefully split the vesico-vaginal septum at the posterior lip to the extent of three lines, carrying the knife completely around the commissures, and keeping close to the vesical surface. I then did the same to the lower and anterior margin, but with greater difficulty, as its aspect was turned from me. The constant welling of blood and urine compelled me to work very slowly. I then syringed with cold water, which in some degree repressed the bleeding, and with the ordinary fixed needle, as used in a similar operation by Mr. M. Collis, I inserted four ligatures of strong brown thread at intervals of three lines, carefully avoiding penetrating the vesical mucous membrane. I secured the ligatures over two bars of gutta percha, and was most cautious not

to draw the thread too tight, thus preventing the risk of strangulation of the margins enclosed between the quills. The operation lasted about half an hour.

She was then placed in bed on her face, her body well supported by pillows, a long gum-elastic catheter was passed and secured, and one grain of opium was directed to be given every third hour.

On the fourth day I examined, and was gratified to find the margins of the wound in perfect apposition, and no suppuration. I divided the ligatures, but did not remove them until the following day—that is, the fifth from the operation. The union was complete, but I did not venture to withdraw the catheter or act on the bowels until the eighth, when they were gently moved by a mixture of castor oil and tincture of rhubarb.

On the eighteenth day she was walking about the ward. She said she was able to retain her urine, and her only inconvenience was a tendency to micturate frequently. This gradually subsided, and on the 14th of August she was discharged in perfect health, and is at present in a good situation, and, as she declared to me, as well as ever she was in all her life.

This mode of operating appears to me to possess the following advantages:—

1. Facility of execution.
2. Probability of speedy union by adhesive inflammation.
3. The prominence of the vesical flaps forms an admirable barrier to the urine insinuating itself.
4. Comparative freedom from hemorrhage.
5. If it does not succeed, there will be no increase of the fistulous aperture, as after other plans.—*Lancet, Aug.* 22, 1857, *p.* 193.

105.—ON OVARIOTOMY.

By Dr. Clay.

[This paper was read by Dr. Clay before a meeting of the medical profession, in the house of Professor Simpson, of Edinburgh. Dr. Clay has now operated in seventy-nine cases of ovarian tumour, fifty-five of which had been successful, but he was now confident, that operating de novo, from his increased experience, he would not have more than twenty-five per cent. of fatal cases.]

Notwithstanding the frequency with which the operation had now been performed, he considered that there were several questions of interest with reference to ovariotomy that still required solution, and on which there was considerable difficulty experienced in deciding. The question as to the large or small incision was the one to which he would first refer. He thought, with due deference to the opinion of such of his professional brethren who differed from him, that the operation could never succeed so well with the small as with the large incision; the principal objection he had to it was the difficulty which it threw in the way of ascertaining the extent and relations of the adhesions of the tumour, when such existed, besides the limited space afforded by it for the necessary manipulations. With respect to adhesions, he was not inclined to place so much importance on their presence as a point in deciding the question as to the expediency of operating in any particular case. There were certainly many very obscure points in the diagnosis of adhesions. He would no doubt prefer a mobile tumour for operation; but he had been induced to think so lightly of them, that he did not attend specially to their diagnosis. He had refused many cases on account of adhesions, which he would now have no hesitation in making the subjects of operation, with every prospect of success. If the adhesion was only very slight or recent, no difficulty would be experienced in its detachment; if well organized, he was in the habit of leaving it on the peritoneum, and cutting away the free portion of the sac round it. In many cases, he had cut away large patches of the peritoneum with perfect impunity. He had never any difficulty in diagnosing which ovary was the seat of the disease. In ordinary cases, he secured the pedicle of the tumour with a single ligature; but when it was thicker than the finger, he considered it necessary to *trans*fix it with a double ligature. The end of the ligature was always left depending from the lower extremity of the wound. In regard to the contents of the

tumour escaping into the abdomen, no bad results had ever attended that occurrence; he never had any hesitation in sponging out the cavity of the peritoneum when rendered necessary; he thought, indeed, that much had to be learned as to what could be done with the abdomen as regarded its surgical relations. Opium played the chief part in the after-treatment, the principal indication being to keep the bowels locked up for three or four days. The advantages derived from chloroform during the operation had been most apparent, and he could answer for its having had no subsequent bad effect. He usually tapped the tumour three or four days before operating. His objection to repeated tapping for the cure or palliation of the disease was, that that operation ultimately proved fatal. He had not found the tumour recurrent in the same side, but in two instances it had returned in the opposite ovary. Many of his patients have had families subsequent to the operation; the first child after had generally been born prematurely, but there had been no peculiarity in the other labours. He believed that there was an hereditary tendency to the disease. A grandmother, her two daughters, and her granddaughter, had all been the subjects of ovarian tumour. He had also traced critical days in the recovery; the third and fourth being usually the fatal days—death generally ensuing from prostration ending in collapse. When patients came to him in the earlier stages of the disease, he always advised them to delay the operation till their symptoms rendered it more necessary. In the Medico-Chirurgical Society of Manchester, Dr. Blackwell, who had been present at most of his operations, had said that the cases were not of such long standing, nor of such large size, as was generally held to warrant operative interference. This he denied. In the last forty cases, the tumours averaged thirty pounds in weight, and one weighed seventy-three pounds and made a good recovery. He had operated on patients of all ages—as early as twelve years, one at sixteen; the two oldest were aged respectively fifty-seven and fifty-eight, and the latter made the best recoveries; but he would not recommend operating beyond that age.—*Edinb. Med. Journal, Oct.* 1857, *p.* 367.

106.—ON THE ENUCLEATION OF UTERINE FIBROUS TUMOURS.

By Jonathan Hutchinson, Esq.

[Operations for the enucleation of uterine tumours, may be divided into enucleations properly so-called, when the tumour is completely removed at the time, and into enucleations by gangrene, when a series of procedures are adopted with the object of exposing, and partially detaching, the growth, in the hope that its death and extrusion might follow. The risk by the two modes is about equal under either, about two thirds of the cases end in recoveries.]

The mode of performing the operation.—Whoever has either witnessed its performance, or read the detailed accounts given in some of the French narratives, will have no difficulty in admitting that the enucleation of a large embedded uterine tumour is an operation which calls into requisition first-rate surgical endowments. In not a few on record it occupied between two and three hours in its performance, and presented such obstacles, that the operators were repeatedly on the point of relinquishing their task. The circumstance that these tumours not unfrequently occur to single women, in whom the vagina is narrow, often adds to the difficulties of the case. It is, of course, impossible to give rules which should be applicable to all; but the following memoranda are the result of much investigation, and a careful perusal of all that has been recorded, and will probably be useful to any one who may contemplate its performance for the first time. 1. To have the tumour well depressed into the pelvis by an assistant. 2. To let the first incisions be very free, and pass deeply down into the tumour, thus not only completely dividing its capsule, but facilitating its bisection, should that afterwards be found requisite. This first incision should be made with a scalpel. In most cases it will be found convenient to pass the knife into the uterine cavity, and then turning its edge on to the tumour, cut downwards, and either forwards or backwards, according as the mass may occupy either the anterior or posterior wall. All experience goes to show that no important hemorrhage is to be feared from this incision, and, if directed in the manner indicated, the whole substance of the tumour will intervene between the knife and the peritoneum. 3. The capsule of the tumour having been opened, its separation should next be effected by means

of the finger, or, if needful, by blunt-pointed curved scissors, the finger being used as a director. 4. The surgeon should be provided for this part of the operation with a set of curved scissors, of various sizes and shapes; one pair at least should be very long indeed. He should also have several pairs of strong and large vulsella, a spatula, a blunt hook, a scoop, and a pair of small midwifery forceps. In several cases the operators appear to have been baffled for want of vulsella of proper size and strength for securely holding the tumour. A strong whipcord ligature, and the various appliances for its use, should be in readiness in case of need. 5. The grand object of the operator, after having separated the tumour from its cyst wall sufficiently to allow of its lower part being seized, is to invert the uterus, and drag that viscus, together with the tumour, to the external parts. If this be accomplished, the main difficulty of the operation, that, namely, of working in a confined space, is overcome, and a speedy conclusion may be effected. To do this, a large vulsellum should be carefully planted in the mass, and traction, at first gentle, afterwards vigorous, must be exerted. The axes of the pelvis must, of course, be carefully observed, and the traction must be steady, and not by jerks. As soon as practicable a second vulsellum must be placed above the first, or, if more convenient, the midwifery forceps may be employed. 6. After eversion has been accomplished, an examination with the finger in the rectum should be made, and the relative position of parts having been duly ascertained, the remaining attachments of the tumour must be cautiously separated. The utmost care must be exercised not to cut into an inverted pouch of peritoneum. 7. It is very possible, if the tumour be a large one, that it will be found convenient, before drawing it down, to cut away a portion or portions, and thus diminish its bulk. 8. It is needless to remark, that throughout the utmost patience must be exercised, and as much gentleness as is consistent with the requisite degree of force. 9. The operation complete, the everted uterus must be returned; if needful, a sponge plug should be introduced, and a full dose of opium should be given. 10. The use of ice, of the ergot, and of diffusible stimuli must be resorted to, or not, according as circumstances may require.

After Treatment.—The after-management of these cases must, of course, be conducted on general principles. The writer has, however, to speak in terms of the strongest condemnation of the use of turpentine in that form of low inflammation of the pelvic organs, or peritonæum, which not unfrequently follows. It is more especially indicated if rigors have occurred, or if there be symptoms of impending pyæmia. The dose should be from 20 minims to half a drachm. Should there be abdominal tenderness, turpentine stupes may be usefully resorted to. Opium in full doses is another sheet anchor. Perhaps the symptom of restlessness will be most reliable by which to distinguish the cases most needing this drug. There will be no objection to combining its use with that of turpentine; but in cases in which the patient was sinking into helpless profound exhaustion, and no peculiar degree of restlessness was present, the writer would prefer to rely on turpentine.

Enucleation by Inducing Gangrene.—This method, if we count those in which primary enucleation was attempted but could not be effected, and include also those believed to have occurred in Dr. Simpson's practice, has been performed in about 27 cases. Out of these there have been about 13 deaths, 10 recoveries, and 4 incomplete cases, in which either it was known that the whole of the tumour had not come away, or there was a return so soon as to render it highly probable that some part had been left behind. Almost all these were cases in which the tumour was of very large size, and in several the operation was undertaken on account of immediate urgency, and after the patient had been reduced to the very lowest state by hemorrhage. Thus it appears probable that of cases of this class somewhat more than one half may be expected to come safely through the risks incident to the procedure, and rather less than half to result in complete cures. It must be borne in mind that a large majority, indeed almost the whole, were out of all possibility of treatment by the primary method. This plan has the recommendation of being an attempt to imitate nature. Although confessedly very unfrequent, yet cases have occurred in which fibrous tumours of the womb have sloughed and been extruded from their bed without the assistance of the surgeon. A far more common event than this is for them to become pedunculated and

assume the polypoid form without wholly losing their connexions to the uterus. Although but few facts exist on which to ground a positive opinion, yet judging from those which have fallen under our notice, we suspect that the fatality of the cases in which spontaneous extrusion has occurred has been little less than that of those in which it has been induced artificially. The process is one always attended with much constitutional irritation. Although no single operation is required in itself involving much risk, yet, with a large sloughing mass in such an important position, with fetid discharges continuing for several weeks, the patient is kept for a considerable time in constant danger of the development of some fatal complication, in the form of pyæmia, peritonitis, or a low type of inflammation of some of the internal viscera. Repeated, if not almost daily, manipulations are needed, and the increased risk of some contagion, either of erysipelas or pyæmia, being thus conveyed by the surgeon, must not be lost sight of, especially if the patient be an hospital inmate. Then, again, it must be borne in mind that the patient has been reduced by long-continued hemorrhages, and that in all probability her vital organs are already, to some extent, in a state of fatty degeneration, a condition which, under the evil influence of profuse suppuration, is not unlikely to become rapidly advanced to a degree incompatible with continuance of function. These kinds of risks render the operation one which will always be attended with much danger, and we think all will admit that it is one which ought never to be performed in an hospital ward. A healthy locality, and privacy in a large well-ventilated room, with the undivided attentions of a nurse, should be regarded as essential conditions. With these, and with most persevering attention to every minutiæ in the medical and dietetic management of the patient, it may, perhaps, be reasonably expected that the mortality, even in severe cases, might not exceed a third; but there are certainly no grounds for hoping for a success beyond this.

With regard to the plan of operating, it would appear that the knife possesses great advantages over escharotics. The object is as much as possible to separate the adhesions of the tumour from its cyst, and to thus cut off its vascular supply. Now the effect of the application of escharotics is well known to be to induce the union of subjacent parts, and of this the surgeon not unfrequently avails himself, as in the instance of abscess in the liver, requiring to be opened externally. The dread of hemorrhage from the incisions has been proved by experience to be a chimera, and the prevention of this is, as far as we can see, the only shadow of an advantage which can be claimed for the escharotic plan. By means of a free incision the surgeon may not only divide the capsule thoroughly, but damage the tumour itself, and permit of the finger being employed at the time to accomplish the separation of the cyst wall to as great an extent as practicable. The usefulness of ergot after a free opening has been made, and the certainty of its action in promoting the expulsion of the tumour, is a point on which all observers agree. Whether or not an attempt should be made to accomplish the enucleation of the sloughing mass by the hand within a week or two of the commencement of the treatment, or whether it should rather be left to disintegrate and come away in fragments, is a point which the circumstances of the particular case must decide. Dr. Atlee's experience seems to be that the tumour may be left to disintegrate with very good confidence (provided it have been well exposed and freely cut into) that such result will ensue; and some facts which have fallen under the writer's observation lead him to give full credence to this *à priori* improbable statement. The vitality of many uterine fibroids appears to be very small indeed, and comparatively little interference will often suffice to ensure their death, whilst the manner in which large tumours, when they have once become sloughy, will as it were melt away, is quite astonishing.

What Events may be expected when Fibrous Tumours are not interfered with? —The determination of the feasibility of the enucleation treatment does not rest solely on an accurate estimate of the amount of risk which inevitably attends it. We must consider the other alternatives which are offered us. And here, in truth, is by far the greatest difficulty of the question. If these tumours were always fatal within a short space of time, no one would hesitate to recommend a procedure that offers a fair chance of a complete cure in a proportion of about two-thirds. But we know, on the other hand, that they are of by no means infrequent occurrence, and often cause to their possessors exceedingly little inconvenience. In

cases, too, in which at one period of life, and that often a protracted one, repeated and exhausting hemorrhages have been induced, we know that not infrequently the tumour will either alter its position, diminish in size, or undergo such modification in its relations that the troublesome symptoms cease to occur, and the patient is restored to health. On this point we will quote only the confirmatory testimony of Lisfranc, which is the more valuable because it comes from an ultra-partisan of the operation. After speaking of temporary abatements of symptoms, that surgeon writes: "Il est des personnes plus heureuses; après avoir éprouvé pendant quelques années des douleurs violentes, des pesanteurs fort incommodes, des pertes très-abondantes, beaucoup de troubles dans les fonctions digestives, etc., elles voient ces phénomènes morbides se dissiper; l'embonpoint renaît et même quelquefois la fraîcheur: il existe seulement un peu de fleurs blanches, une légère pesanteur et quelques petites douleurs dans les reins; j'en soigne plusieurs qui portant des matrices énormes et fortement bosselées fournissent depuis dix ou douze ans leur carrière avec les faibles inconvénients que j'ai indiqués; elles semblent promettre de la poursuivre longtemps et peut-être même à l'aide des moyens hygiéniques et de quelques soins thérapeutiques, comme si l'utérus à l'état sain."—'Clin. Chir. de la Pitié,' Vol. III., p. 16.

Researches in the pathological theatres show us what these changes are, the effects of which we have noticed in the sick room. Uterine tumours are often found contracted, and to a large extent ossified, or lodged in the outer part of the uterine parietes, or even pedunculated into the peritoneal cavity. We might also mention, under the possible events which may obviate the necessity of an operation, that spontaneous enucleation may occur; but, as we have seen above, that the risks attending this process are probably as great as when the surgeon interferes, it need not claim much attention. Thus, then, there are probably but very few cases in which the conscientious surgeon could say to his patient that the chance of recovery without an operation was hopeless. Still, however, that a number of deaths from these tumours does occur is undoubted; and in certain cases the amount of reasonable hope is, it will generally be admitted, very small indeed. While, therefore, the indiscriminate adoption of these operations would be exceedingly unwise and wrong, yet we cannot but think that the reverse is the case under conditions of urgency. It happens very fortunately that those tumours which cause serious symptoms are usually the ones most easily accessible. The proximity of the tumour to the mucous membrane of the uterus or vagina, but especially of the uterus, appears to be the main determining cause of hemorrhage, and just in proportion as it bulges inwards is of course its suitability for enucleation. Tumours of very large size have, on the contrary, usually risen well out of the pelvis, and the symptoms attending them are often comparatively insignificant. Two cases which will illustrate these remarks, are at present under the treatment of the writer. In the first the tumour is apparently about the size of an infant's head, is lodged in the posterior wall of the uterus, and is wedged in the upper part of the pelvis. The patient, a single woman aged 46, formerly enjoyed excellent health, and was in very comfortable circumstances, being a clever hand at the umbrella trade. The tumour has been known to exist for four years, and during that period she has been reduced to a most feeble state, and wholly incapacitated both for her occupation and for any enjoyment of life. She has now the anæmic, blanched aspect of a patient in the last stage of a malignant disease, and was indeed at one period under care at a certain special hospital, where she was told that her disease was cancer. The feet are often œdematous. The tumour can be easily felt above the pubes, but does not rise high. At present a course of the bromide of potassium is being employed, but repeatedly, during the last year, the propriety of attempting enucleation has been considered, and several consultations have been held. The second case is that of an unmarried woman, aged 30. The tumour is an enormous one, reaching higher than the umbilicus, and distending the abdomen as if in the last week of pregnancy. Yet here the symptoms are comparatively in abeyance. Menstruation is regular and not too profuse, and attacks of hemorrhage occur only at intervals of several months. She is able to follow her occupation as a dressmaker regularly, and suffers very little inconvenience beyond the weight, &c., of the mass. It would, of course, under such circumstances, be madness to think of attempting any surgical treatment.

Conclusions.—We state the following as conclusions, not in any dogmatic or positive sense of the term; they are the impressions arrived at after much careful study of the subject, but further experience may very likely modify some of them:—

1. That surgical interference with interstitial fibrous tumours of the uterus is always attended with very considerable risk, and ought not to be practised except under circumstances of urgency, or when the position of the growth is peculiarly tempting.

2. That when the tumour is not of very large size, and is already partially extruded, the operation is rendered comparatively devoid of danger, and ought to be performed at once.

3. When the tumour is yet wholly imbedded, and even when of large size, the enucleation treatment is yet warrantable, if the patient's life be threatened by hemorrhage.

4 That primary enucleation, where at all easily practicable, is much preferable to the secondary method.

5. That where the tumour is very large, or where found after the incisions to be firmly united to its capsule, the secondary plan should be preferred.

6. That whichever plan it is intended to adopt, the first incision should, excepting under unusual circumstances, be made from within the cavity of the cervix, and should be as free as possible.

7. That the danger of hemorrhage from this incision is very slight indeed.

8. That as much should be done as practicable at the first operation in the way of freeing the tumour from its cyst. Thus if the adhesions be found more loose than had been expected, a primary enucleation may be completed where the slower plan had been proposed.

9. That the after-treatment in cases of primary enucleation should consist in warding off the shock by opiates, in sustaining the strength, and in the free use of stimuli and nutritious diet.

10. That in cases of secondary enucleation the ergot of rye should be administered, so as to keep up vigorous uterine action, that the greatest attention should be paid to sustaining the patient's strength, and to the removal of discharge, and shreds of slough, as fast as formed.

11. That in cases of great exhaustion, and threatened pelvic inflammation, the internal use of turpentine is of great value.

12. That in cases of secondary enucleation the surgeon need not be anxious about the removal of the tumour *en masse*, but may entertain a good confidence, that if it have taken on a sloughy state in its lower part death and piecemeal disintegration of the whole will follow.

13. That the "recurrent fibroid" tumours slough away yet more readily after interference than the true fibrous ones, although liable to return after a short interval of health.

14. That after a successful enucleation procedure, complete, though gradual, restoration to good health may be expected.—*Med. Times and Gazette, Aug.* 15, 1857, *p.* 168.

107.—*On a Case of Fibrous Tumour of the Uterus removed by Incision and Enucleation.* By THOMAS P. TEALE, Esq., Surgeon to the Leeds Infirmary.—[In this case the patient, who was unmarried and had never been pregnant, was in an exhausted and anæmic state from large discharges of blood from the womb.]

On examination, the vagina was found rigid and narrow, except at its upper part, which was distended by a large fibrous tumour. This mass seemed to fill the upper opening of the pelvis. The mouth of the womb was so completely dilated, that it could not be felt.

November 13. The patient being bandaged, and placed in the position as for lithotomy, Mr. Teale applied the long midwifery forceps to the tumour, and having firmly grasped it, proceeded gradually to bring it beyond the external parts. This process was tedious on account of the rigid condition of the vagina and perineum, but by steady perseverance, and the re-application of the forceps, which had once slipped, the tumour was at length drawn fairly beyond the external parts, bringing along with it the inverted womb. It was now found that the tumour was not pedunculated, but attached by a broad base to the womb, from which organ it

received a somewhat dense covering. The distinction between the tumour and the general substance of the womb could be readily perceived by the touch. An incision was now made through the investing membrane round the basal portion of the tumour, not far from its attachment to the womb, after which, the mass was readily detached by enucleation. The inverted condition of the womb was immediately afterwards reduced by the hand passed into the vagina, after which the patient was put to bed, and took an opiate and some hot brandy and water. The separation of the tumour was effected with scarcely any loss of blood.

The tumour measured five inches in length by three in breadth. About one half of its surface was covered with the investing membrane, and the remaining half exhibited the exposed nodulated surfaces of fibrous texture.

November 17. The discharge, which has been slight since the operation, has now ceased to be coloured with blood. The patient feels well, and has scarcely had any pain since the operation.

[She was seen seven months after the operation and was in good health.]—*Med. Times and Gazette, Aug.* 1, 1857, *p.* 117.

108.—A NEW INSTRUMENT FOR THE TREATMENT OF UTERINE POLYPI.

By Dr. James H. Aveling.

This instrument consists of a curved stem, at one end of which is a hook. At the other end is a screw, which forces up a plate of metal into the concavity of the hook, in such a way as to *crush* through anything which may be placed in it. A handle fits on the lower end of the stem, the use of which is two-fold. First, it enables the operator to have a firm grasp of the instrument while introducing it; secondly, it acts as a key, preventing the whole instrument from revolving with the screw while the plate of metal is being forced up.

The mode of operating with it is simple and easy. Having screwed the plate half way down the stem, out of the way of the hook, and having fixed on the handle, grasp the instrument with the right hand; then, by the guidance of the left forefinger, glide it gradually into the vagina, and over the polypus, until the hook comes in contact with the peduncle. This may then be readily caught, and the operation concluded by screwing up the metal plate, holding the handle during this part of the proceeding with the left hand, and screwing with the right.

It is at the option of the operator whether he will use this instrument for the purpose of strangling the neck of the polypus, or for crushing it through at once. Those who prefer the use of the ligature will perhaps be glad to try this instrument, on account of the ease and safety with which it may be used, and the power it gives the operator over the duration of the operation. Those who advocate the immediate removal of uterine polypi by the knife may also be induced to use it from the bloodless character of the wound which it inflicts. Like the ecraseur, it first condenses the tissues, and then divides them. The opinion of the

profession upon the proper mode of treating uterine polypi is just now somewhat divided. Those who use the ligature fear the fœtid discharge caused by the putrefaction of the polypus: those who use the knife fear the hemorrhage from the cut surface. Dr Aveling thinks, that by the use of his instrument both these evils may be obviated. Time alone can prove the truth of his supposition.*—*Med. Times and Gazette, July* 25, 1857, *p.* 90.

109.—POLYPUS UTERI REMOVED BY THE ECRASEUR.

By G. M. Humphry, Esq., Surgeon to Addenbrooke's Hospital, Cambridge.

[This case was that of a woman aged 52, much blanched and weakened from a constant discharge from the vagina, which had continued nearly two years.]

Sometimes there was an interval, varying from a week to a month, in which there was no discharge, either white or red; lately, however, the discharge had been constant. It appeared that there was no interval between the cessation of the catamenia and the appearance of this discharge; the duration of this latter must, therefore, be uncertain. No enlargement of the uterus was perceptible above the pubes. In the vagina, a softish leathery-feeling mass, larger than a walnut, was felt hanging through the os uteri. The circle of the latter could be felt clearly on the right side and fore part, the finger not reaching it well in other directions. There was blood in the vagina; and the speculum showed the surface of the polypus to be superficially ulcerated.

April 3rd. When she was under the influence of chloroform, and laid upon her stomach upon the operation table, with the legs hanging down, the vagina was dilated by means of suitable speculum and spatulæ. Mr. Humphry then seized the polypus with the vulsellum, and pulled it down so as to bring its neck through the os uteri, and enable him to pass the chain of the *écraseur* round it, some distance above the expanded portion which projected through the os. It was easily divided by the instrument, with scarcely any hemorrhage; and was brought away. It consisted of the ordinary fibrous structure, covered by a thick layer formed, apparently, by a prolongation of the lining membrane of the uterus. This, which had furnished the blood, was at the extremity of the polypus, vascular and ulcerated.

April 23rd. No unfavourable symptoms followed. On examination, the os uteri was found natural; there was no trace of polypus. A week after the operation, there was some discharge, of a red colour; but this soon ceased, and there has been no return of it.

Remarks.—There is perhaps no class of affections in which the *écraseur* is likely to prove of more real value than polypus uteri, provided the chain can be applied sufficiently high upon the neck of the tumour. By it would be avoided, to a great extent, the dangers incidental to the ordinary plan of ligaturing the polypus by means of Gooch's canula, such as inflammation of the veins, secondary abscesses, &c., which have so often proved fatal, that the operation of tying a polypus is, with reason, regarded as one of great danger. The risk of hemorrhage, which has constituted the objection to the more speedy removal of the growth by the knife or scissors, as practised by Dupuytren, is also avoided.

The difficulty of passing the chain high enough round the neck of the polypus, which will prove the objection to this new method, may be often, in great measure, overcome by seizing the polypus with hooks, and dragging it lower down, as was done in this instance. It was a peculiarly favourable case, from the fact of the tumour having already, in part, passed through the os uteri.

It should also be borne in mind that it is not always necessary to remove the whole of a polypus; for when the expanded portion has been taken away, the part of the neck remaining in the uterus commonly wastes, or, at any rate, gives no further trouble.—*British Med. Journal, May* 16, 1857, *p.* 407.

* The instrument may be obtained of W. and H. Hutchinson, surgical instrument makers, Norfolk street, Sheffield.

MISCELLANEOUS SUBJECTS.

110.—ON THE THERAPEUTICAL USE OF ELECTRICITY BY INDUCTION.

By Dr. J. Althaus.

[Formerly electricity could not be applied to a diseased part without endangering the healthy organs, and sometimes the whole nervous system. By Dr. Duchenne's method, electricity can be localized in one part, without irritating another; Dr. Duchenne has been pleased to call his method "Faradization," consecrating to this method of electrization the name of Faraday, who discovered the important phenomena of induction.

When the skin and the excitors are perfectly dry, and the epidermis very thick, as it is in many people whose professions expose them to the air and hard work, the two electric currents coming forth from an apparatus of induction reunite themselves on the surface of the epidermis without penetrating the skin. They produce sparks and a special crepitation, but no physiological effect whatever. When dry excitors are put on the skin, where it is sensible to electricity, the one subjected to the experiment feels a superficial sensation coming out of the skin, and varying according to the intensity of the current from simple tickling to the acutest pain. But when the skin and the excitors are wet, neither sparks, nor crepitation, nor sensation of heat, are produced, but different phenomena of contractility or sensibility are obtained, according as one acts on a muscle, or on a nerve, or on the surface of a bone. In the last case a very strong pain of quite a peculiar character is produced, and it is not allowable to put wet excitors on the surface of the bones. When the excitors are put on the surface of one muscle, the contraction of this muscle is produced, together with a sensation, which is not peculiar to the skin, but always accompanies the electro-muscular contraction; for instance, when one acts on a muscle laid bare by a wound, and no more covered by the skin. Finally, when the excitors are put on the surface of a nerve, the contraction of all muscles, animated by this nerve, is produced.

There are, therefore, two different modes of electrifying the muscles—either by concentrating the electric action in the nervous plexuses or branches, which communicate their excitation to the muscles animated by them ("indirect muscular Faradization"); or by directing the excitation on only one muscle ("direct muscular Faradization"). In both ways the skin and the excitors must be wet. On the muscles of the trunk and most of the limbs wet sponges are applied, thrust in metallic cylinders, which are screwed on isolating handles. For limiting the electric power in the muscles of a smaller surface, as the muscles of the face, the interossei and lumbricales, conical metallic excitors are used, which are likewise screwed on isolating handles. These excitors are then covered by wet leather; for example, fingers of gloves.

Indirect muscular Faradization requires exact knowledge of the anatomical position of the nerves. In the arm, the electric power can be limited to the median nerve on the inner and inferior third of the humerus; to the ulnar nerve on the interval between the olecranon and the internal condyle. The radial nerve is accessible to Faradization at the junction of the two upper thirds with the lower third of the humerus; the musculo-cutaneous in the axilla. On the thigh, indirect muscular Faradization is easier. The crural nerve is to be found in the groin, outside of the femoral artery; the two popliteal nerves in the popliteal space. The sciatic nerve is only accessible to Faradization on its origin in the pelvis, through the posterior wall of the rectum.

In the other parts of the body, indirect muscular Faradization becomes difficult and delicate. On the face, the trunk of the seventh pair, covered by the parotid gland, is inaccessible to electricity, whatever may be the intensity of the current. But it can be reached, where it passes out of the stylo-mastoid foramen; here an excitor is to be placed in the external opening of the ear; in this point the nervous trunk is separated from the excitor only three or four millimetres. Its branches may be excited at the points where they emerge from the parotid gland. Contraction of the muscles being under control of these branches, is the certain signal of their electric excitation.

In the supra-clavicular region, the excitors, placed immediately over the collar-bone, act on the brachial plexus. On the summit of the supra-clavicular triangle they are in connexion with the external branch of the eleventh pair. This nerve, the respiratory nerve of Bell, is the most excitable of all the nerves of the human body. The lower half of the sterno-cleido-mastoid and the trapezius are very little excitable. But when a very feeble current is directed on the upper half of the sterno-cleido-mastoid, or on the external border of the upper half of the trapezius—a current, indeed, which would not be expected to produce any movement in the muscles at all—the head is strongly inclined to the side acted upon, and the shoulder drawn up by a violent and sudden movement.

The muscles, like the nerves, do not all possess the same degree of excitability. If they did so, muscular Faradization would be very easy. Now, however, it is necessary to measure the electric dose for the different muscles, only rightly to be done when the operator is guided by a long experience. The electro-muscular sensibility—viz. the sensation produced by the electro-muscular contraction, is very different likewise in the different muscles. Some muscles are so extremely sensible, that Faradization is occasionally impracticable. Electro-muscular sensibility is very lively in the muscles of the face, due to the ramifications of the fifth pair, which excite these muscles. It is important to avoid always the points corresponding to the infra-orbital and submental nerves, the excitation of which gives a very painful sensation. The most excitable muscles of the face are the frontal muscle and the orbicularis palpebrarum; the least so, the buccinator and the masseter. Of the neck, the platysma myoides is just as excitable as the upper half of the sterno-cleido-mastoid and the external border of the upper half of the trapezius. The most excitable muscles of the trunk are the pectoralis major and the muscles of the fossa infra-spinata, chiefly the rhomboidei; then follow the deltoid and the muscles of the arm. The anterior are much more excitable than the posterior muscles of the extremities. The most excitable muscle of the leg is the tensor vaginæ femoris.

It is quite certain that sufficiently wet excitors, in perfect contact with the skin, give rise to *muscular* sensation only; but at the moment when it is applied to the skin, and before the contact is perfectly established, a *cutaneous* sensation is mixed with the muscular sensation. Therefore muscular Faradization chiefly when applied by rapid intermissions, is much more painful at the moment when the excitors are applied to the skin. It is easy to spare this sensation to the patient. Before putting the excitors on the skin, one approaches them, so that they touch each other, and the current is neutralized. Then, when they are in perfect contact with the skin, remove the one from the other, so that the electric recomposition is effected in the muscle to be excited.

Many interesting facts have been evolved from the application of electricity to the study of the functions of the muscles of the living body. It is become possible to create so, a kind of living anatomy. It is true that the deep strata of the muscles, covered by the superficial ones, will not clearly exhibit their contraction. But here pathology has seconded physiology. It is chiefly muscular atrophy, terminating in fatty degeneration of the muscles, that, by destroying the superficial muscles, takes away the impediments to the electric current, and thus helps to the knowledge of the function of every muscle in the living body. Many of the theories on the functions of the muscles formerly adopted have thereby fallen to the ground. As one of the most remarkable facts now established, I only suggest, that the muscle extensor communis digitorum has no influence whatever on the extension of the second and third phalanges, but only on the first; that it is, in fact, the little lumbricales and the interossei that extend the second and third pha-

langes, and bend the first. Also, that the muscles, flexor sublimis and profundus, bend the second and third phalanges, but not the first. This is confirmed by many pathological facts, chiefly on lead-paralysis and fatty degeneration of the muscles. In lead-paralysis, the extensor digitorum is paralysed, but not the lumbricales and interossei. Therefore, in lead-paralysis, the power of extension of the second and third phalanges remains in all its integrity; only the first phalanges cannot be extended. On the other hand, when the extensor digitorum is not paralysed at all, sometimes the hand has the form of a claw, the interosseous spaces are deeply hollowed, the hand is very thin; the first phalanges are extended, but the second and the third are bent. This condition of the hand is due to paralysis and atrophy of the lumbricales and the interossei, and is often cured by Faradization of the named muscles.

Dr. Duchenne has given a special study to the function of the muscles of the face, to know the mechanism of the physiognomical expressions. It is true, that although these muscles have a very small surface only, electricity can be localized in every one, so as to produce isolated contractions. The way to show most clearly the part every muscle takes in the different physiognomical expressions is, to electrify the muscles of the face of a man who has just died, and whose muscles have yet retained their irritability; for the living man, when electrified, always mixes involuntary movements, not connected with the contraction of the electrified muscle, an impediment, of course, to the observation of the individual action of the muscles. It is, indeed, very interesting to see on a dead body all the physiognomical expressions produced, for it is only the muscles which are put into action by thoughts, passions, and character; they preserve, during the muscular repose, the predominance of tonic force, and stamp on every physiognomy its peculiar impression. If there was not in every face tonic predominance of this or that muscle, all physiognomies would be like each other, as the muscles have the same directions, attachments, and strength, and the bones only differ from each other by their volume. So the frontal muscle, when slightly contracted, cheers up the face; more contracted, it expresses doubt, surprise; in the highest degree of contraction, and united with some other muscles, it gives the expression of an agreeable surprise or of terror; it also wrinkles the forehead, and when paralysed, the wrinkles disappear.

The pyramidales nasi, which are in intimate relation with the frontal muscle, and therefore considered by many anatomists as only one muscle with the frontal, in their physiognomical action too, nevertheless are the antagonists of the frontal muscle; they give a sad expression, and, when more contracted, a threatening one. It forms a striking contrast to see these two opposite movements produced in so small a space as the level of the eyebrows.

Isolated contractions of the orbicularis palpebrarum and corrugator supercilii express reflection; united to the pyramidalis, they express malice. The platysma myoides gives the expression of pain; united with the frontal muscle, it expresses terror; and, with the pyramidalis, rage. Contraction of the triangularis nasi gives the expression of lust. The zygomaticus major always expresses mirth, from simple smiling to the most extravagant hilarity; united with the frontalis, it gives the expression of an agreeable surprise; with the platysma myoides, the sardonic laugh. The zygomaticus minor, on the contrary, gives the melancholy air. The levator alæ nasi and labri superioris is the real weeping muscle of children, and produces a very ugly grimace. By the contraction of the external fibres of the orbicularis oris, the lips are everted forward, as for kissing and whistling; the internal fibres apply the lips against the teeth, as is done, for instance, by players of the clarionet for pinching the reed of their instrument between the lips. The levator menti is the only muscle in action in persons who repeat their prayers inaudibly in Catholic churches. The triangularis oris expresses sadness; in children it is the precursor of tears; in the maximum of its contraction it expresses disgust.

As electricity is able to produce muscular contractions without injuring either the skin or the muscles themselves, it may be applied, when muscular contractility is weakened or lost—namely, in muscular paralysis, whether resulting from wounds of the nerves, or from lead-poisoning, or by hemorrhage into the brain, by rheumatism, by hysterics; in paraplegia; finally, in progressive atrophy of the muscles which terminates in their fatty degeneration.

I now proceed to an exposition of the method of electrifying the skin. Faradization of the skin is to be practised by means of dry excitors applied to the dry skin, and by the current of the second order; it is capable of exciting, in the highest degree, the sensibility of the nerves of the skin, without ever destroying the skin itself. Only when it is practised by the strongest current and the strongest excitors, and in persons whose skin is very delicate, a little erythema sometimes follows, which, however, very soon ceases; but never anything like inflammation or gangrene, such as is produced by galvanism.

As the different parts of the body have various degrees of sensibility, there must be different processes for cutaneous Faradization. There are, however, three principal processes, which, united with the regulation of the current by the tube of water and the copper cylinder, seem to fulfil all the conditions required.

The first process is Faradization by the electric hand. A wet excitor, which communicates with one of the poles of the apparatus, is placed on a point of the body of the patient, which is very little excitable, for example, in the surface of the hand; the other excitor, united with the other pole, is kept in the hand of the operator. After having dried the skin of the patient by the application of a little rice powder, the operator passes rapidly the back of his disengaged hand over the points to be excited. The application of the electric hand produces on the face, under the influence of a somewhat strong current, a lively sensation; but on the other parts of the body it evolves a sensation hardly perceptible. Lively crepitation, produced by the rapid passage of the hand over the skin, is there the only appreciable phenomenon; electricity is heard, but not felt. By strengthening the intensity of the current, there can be produced more violent sensations.

The second proceeding of cutaneous Faradization is exercised by *solid metallic excitors*, which are screwed on isolating handles. The skin must be dry as before; but if the epidermis be too thick or hard, as on the hands and feet of many persons, the skin must be moistened a little, in order that electricity may pass through the thickness of the skin. When it is necessary to exercise a very strong impression in a certain point, the excitors are held some time in contact with the skin. When sensibility is normal, this gives a sensation as if a red-hot nail were thrust into the skin. It can be applied chiefly near the vertebral column. The solid metallic excitors, though acting energetically on the skin of the face and of the trunk, are often insufficient on the hands and on the soles of the feet, whatever may be the intensity of the current.

For such cases *metallic wires* are employed in the shape of brushes, thrust in metallic cylinders, which are screwed on isolating handles. The skin is to be lightly beaten by these wires, but sometimes it may be necessary to leave them longer in contact with it; the sensation produced by it is stronger than that produced by red-hot iron, according to the patients who have tried both.

I have already mentioned the exquisite sensibility of the skin of the face, due to the ramifications of the fifth pair. The most feeble current of induction exercises here an effect which is by no means felt in the other parts of the body. Sensibility is much stronger near the middle line of the face than far from it—namely, in the eyelids, the nose, and the chin, than on the cheeks. Electric excitation is more strongly felt in the nostrils than in any other point of the body. On the forehead there is not so much sensibility as on the face, and very little on the scalp. It is more exquisite on the neck and on the trunk than on the extremities; more in the cervical and lumbar region than on the other parts of the trunk; more on the inner and anterior surface of the extremities than on the external and posterior parts. The skin of the hands and of the soles of the feet can only be stimulated in a lively manner by an intense current and strong excitors.

Faradization of the skin is useful in both exalted and dejected states of the sensory nerves—viz., in anæsthesia and neuralgia; as tic douloureux, irritable breast, sciatica; in which diseases the most wonderful results have been obtained, after all other treatment had proved unsuccessful. The same can be said of muscular rheumatism, the entire removal of which, after some applications, may be fairly reckoned upon. This applies also to protracted cases, where leeches, cuppings, vesications, morphium, Russian vapour-baths, and hydropathy, have been used with little or no success.

Finally, a few words upon Faradization of the internal organs. The tympanum

has been electrified with success in nervous deafness. The meatus auditorius externus is to be filled with water; a metallic excitor is then kept in the fluid, and the current is closed by putting the other wet excitor on the nape of the neck. The excitability of the tympanum is very great, and therefore only a feeble current and distant intermissions are allowable. At the moment the current is closed, the one subjected to the experience hears a little noise like scratching; the more rapid the intermissions are given, the more the noises approach each other, and they now imitate the buzzing of a fly on the window. This proves that the tympanum is affected; besides when the intensity of the current is increased, tickling and even pain is produced, together with a metallic sensation of taste in the tongue. This is impossible without excitation of the chorda tympani. As I have already stated many cases of nervous deafness, which often result only from relaxation of the tympanum, have been cured by Faradization.

The same is to be said on the sense of smell. A wet excitor having been placed on the nape of the neck, the second is conducted on all points of the Schneiderian membrane. It has often been enough to excite very slightly the general sensibility of the mucous membrane of the nose, to call back the lost or weakened smell. For exciting the nerves of taste, metallic excitors are conducted on the edges of the tongue and on the palate. For exciting the retina, as in amaurosis without changes of structure, galvanism may be used, or the current of the second order of an apparatus of induction, applied by means of wet excitors to the eyelids, or on any other part of the face.

Faradization of the rectum and of the muscles of the anus has been used for the cure of involuntary stools and prolapsus of the rectum; as they are often produced by paralysis of the sphincter and levator ani. Then a metallic excitor, the end of which has the form of an olive, being isolated by caoutchouc, is introduced into the rectum, and put into communication with one of the poles of the apparatus of induction; the other wet excitor is applied near the anus. Previous to this operation the rectum must be always cleared from stercoral matters by means of clysters. The margin of the rectum is so very sensible to the electric excitation, that the feeblest current applied to it excites an unbearable tenesmus. Therefore, if it is not necessary to act on the sphincter ani, the excitor must always be isolated.

Faradization of the bladder has always been done in paralysis of the bladder, which complicates paraplegia. To that end the "double excitor of the bladder" is used by Dr. Duchenne. It is composed by two flexible metallic wires, introduced into a sound of caoutchouc with double channel, isolating the one from the other. The two excitors are on that end which is to be put into the bladder, so terminated that when being approached to each other they present the form of an ordinary catheter. The excitor of the bladder thus closed and introduced into it, its wires are driven on about one or two inches, whilst the caoutchouc-sound remains on its place, so that the ends of the excitor are removed from each other. Then the two wires are put in communication with the two poles of the apparatus of induction, and conducted on all the points of the inner surface of the bladder. But it often has been enough to electrify only the muscles of the abdomen for restoring the emission of the urine, as also the constipation so often connected with paraplegia.

The muscles of the pharynx can also be excited, and when paralysed may be beneficially affected. The excitor to be applied differs in no way from that which is used to stimulate the rectum. It is conducted on the pharynx, whilst the other wet excitor is placed on the nape of the neck. It is, however, necessary to avoid the excitation of the sides of the pharynx, as they are in relation with the ninth, the tenth, and the eleventh pairs. If they should be excited, Faradization would be no longer confined to the pharynx, but extended to organs the stimulation of which would be dangerous.

Faradization of the larynx has been done with success in some cases of aphonia, produced by paralysis of the muscles of the larynx. The larynx can be excited directly or indirectly. The method for direct excitation is the following:—The excitor of the pharynx is inserted in the pharynx as low down as the posterior and inferior part of the larynx. The second wet excitor being placed outside, in the level of the crico-thyroid muscle, the former is conducted on the posterior surface of the larynx downwards and upwards, and *vice versâ*. Indirect Faradization of

the larynx is much easier:—The excitor is directed on the sides of the inferior constrictor to reach the inferior laryngeal nerve, animating all the inner muscles of the larynx; whilst the other wet excitor is placed on the nape of the neck.

Direct Faradization of the heart and the lungs, the stomach and the liver, is not possible; but stomach, lungs, and heart may be excited indirectly by Faradization of the tenth pair, accessible through the pharynx and œsophagus. These operations seem, however, to be dangerous and not useful, so that a conscientious physician will seldom, if ever, consent to employ them.

I conclude with a few words about the electric excitation of the diaphragm, easily to be produced by Faradization of the phrenic nerve, which, taking its rise from the third, fourth, and fifth cervical pairs, proceeds downwards and inwards in front of the scalenus anticus, before it reaches the mediastinum and the diaphragm. On the anterior surface of the scalenus anticus the phrenic nerve may be easily excited. Excitors with large surfaces, viz., sponges thrust in metallic cylinders, are kept on the point alluded to, and instantly the artificial respiration is produced; the thorax is expanded, and the air rushes into the lungs with considerable noise. So it is possible to maintain respiration in a body even some time after death; and it may be easily conceived how important this agent may become in asphyxia, whether it be produced by charcoal fumes, by opium, by chloroform, or by cholera. In all these cases the first indication is, to induce respiration, which is often to save life.—*Lancet, Aug.* 22, 1857, *p.* 187.

111.—*On the Solvent Property of Glycerine.* By A. F. Haselden, Esq.—Extensively employed as glycerine is for many external purposes, the value of it as a solvent or menstruum is not, I believe, so generally and fully known, or so justly appreciated, as it deserves to be; and a few remarks, the result of personal practical observation and experiment, may not be altogether without interest to a portion of your readers, particularly those who are desirous of turning to the best account any suggestion likely to add to the comfort or relief of their suffering patients.

The especial property which glycerine possesses of dissolving the disulphate of quinine would alone be sufficient to render it an object of interest, but it is equally powerful with many other substances. It readily dissolves the disulphate of quinine in the proportion of two grains to the fluid drachm, forming at first an opaque fluid, which in the course of a few hours becomes a clear bright solution, possessing the peculiar pale-blue superficial tint peculiar to the solutions of that substance, and this without the aid of heat or any acid. This solution is miscible with waters and tinctures in various proportions, and it appears a great advantage to possess a clear, bright, elegant, and by no means disagreeable solution of the disulphate of quinine, without the addition of acid. Gallic acid, which requires one hundred parts of cold water for its solution, is soluble in rather less than twelve parts of glycerine, making a clear, straw-coloured liquid, of a pleasant, sweetish, sub-acid taste, in this state offering a desirable mode of administering the gallic acid where pills might be objectionable, and a large quantity of fluid impracticable.

Tannic acid is also freely soluble in this substance, and as an external astringent application might prove preferable in many instances to an oily or greasy compound. In the treatment of hemorrhoidal affections, it may possibly offer, as an application combined with opium or the salts of morphia, some advantage over the reigning preparation—unguentum gallæ compositum, it being more tenacious and at the same time lubricating, and when combined with the salts of morphia, in place of opium, it possesses the decided advantage of not staining the linen.

The hydrochlorate and acetate of morphia are readily soluble in glycerine, making a clear limpid solution of a slightly yellow tinge, forming, as it were, a kind of syrup, which might possibly prove in many ways useful in the hands of the profession.

Glycerine also dissolves the ferri et quinæ citras, in the proportion of five grains to the drachm, forming an olive-yellow-coloured liquid peculiar to the solutions of that salt.

There are other substances which glycerine eminently possesses the property of dissolving in a larger proportion than any other known fluid, but sufficient has been said to introduce the subject to your readers.—*Lancet, August* 15, 1857, *p.* 179.

112.—*Pyrophosphate of Iron.*—Messrs. Follet and Baume, writing to the 'Gazette Hebdomadaire de Médecine' of May 29, call attention to the advantages of the pyrophosphate of iron and soda as a remedy in anæmia, and the diseases of which that condition is a symptom, or with which it is coincident. They state that, in 1849, Dr. Leras presented to the Academy of Sciences a work on "The action of the Gastric Juice on the preparations of Iron employed in therapeutics;" and that in 1855 he presented to the Academy of Medicine a memoir, in which he expressed the following opinions:

"1. The ferruginous preparations employed in therapeutics are all more or less precipitated, or transformed into oxide of iron in the stomach.

"2. The pyrophosphate of iron and soda is an exception.

"3. This salt seems destined to take a place among the most efficacious preparations of iron."

Dr. Leras prevailed on several medical men to try on their patients a solution of pyrophosphate of iron and soda, prepared by himself, and the results have just been published by Messrs. Follet and Baume, in "A Report on the Clinical Service at the Asylum of St. Athanasius during the year 1856." They say that even in cases where there is no longer any hope of curing the mental maladies, there may still be a means of retarding the physical decline, which supervenes in almost all the patients in the same form, by a gradual failure of general innervation,—a decline which is shown frequently in the decomposition of the blood, from which result those dropsies which are met with in all the tissues. In such cases, all the efforts of medication ought to be directed to the reconstitution of the blood, and when this result is obtained, it is not unfrequently seen that the system recommences its functions,—a reaction in the inverse direction of the disease sometimes taking place: it is the prelude of an unexpected cure.

Messrs. Follet and Baume know no tonics which act so promptly and favourably as the pyrophosphate of iron and soda, prepared by M. Leras, in a liquid form; it is easy to administer, rapidly absorbed, and does not produce fatigue to the digestive organs. They then give the particulars of seven cases in which the medicine was tried during the year 1856: the results are certainly remarkable.—*British Medical Journal, Aug.* 1, 1857, *p.* 644.

113.—ON THE ASPHYXIA OF SUBMERSION.

By A. T. H. Waters, Surgeon to the North Dispensary, Liverpool.

A series of experiments, of which a Table is given below, was instituted, chiefly with the view of investigating the two following points, viz:—

1st. How long the heart continues to beat in asphyxia, produced by submersion.

2nd. What effects the hot bath produces on an animal asphyxiated by submersion.

It is obviously very difficult to come to anything like a correct conclusion with reference to the first point; as far as man is concerned, it is impossible to do so, and even with regard to the lower animals, it is very difficult; a large number of experiments become necessary in order to obtain an approximation to the truth. The principle generally admitted is, that "in asphyxia the movements of the heart cease in a few minutes after the cessation of the functions of animal life;" but the occurrence of certain facts, such as the recovery of individuals who have been under water for fifteen minutes and even upwards, would lead us to doubt the truth of it. The second point seems more easily ascertainable, but yet no direct experiments seem to have been performed to ascertain the exact effects produced by the hot bath on the system, when asphyxiated by drowning.

The experiments given in the table below were performed on warm-blooded animals, dogs and rabbits, and were conducted in the following manner:—The animals were plunged into water at the temperature of the atmosphere, which varied from 40° to 50° Fahr.; they were kept completely under water from the time of their submersion, and when removed, were either at once, or after the lapse of a stated time, opened by the removal of a portion of the anterior wall of the thorax. The movements of the heart were thus observed, without the pericardium being disturbed. Some of the experiments, viz., 9 and 10, 11 and 12, 14 and 15, and 17 and 18, were parallel experiments, *i.e.*, the two animals of each experiment were of the same age and size, were submitted to exactly the same process of drowning, and were opened at as near as possible the same time; the difference between the two being, that one was put into the hot-bath for the period mentioned; the other was left on the table, exposed to the atmosphere during the same time.

Of the eighteen experiments, two must be set aside in analysing them with reference to the duration of the action of the heart, inasmuch as in them the thorax was not opened till after the lapse of an hour from the period of submersion; these are Nos. 14 and 15. Out of the sixteen remaining, in ten the heart was found beating when first observed; in six it had ceased.

Of the ten, No. 1 must be omitted in calculating the average, inasmuch as the heart was removed whilst in action; the remaining nine give an average of twenty-six minutes, *during which the ventricles of the heart continued to contract;* and if we allow nine minutes as the average of the six, which, on being examined, were found not contracting, we have a general average of nineteen minutes for the fifteen. These conclusions do not coincide with those of Mr. Erichsen, who experimented chiefly on dogs, by producing asphyxia in the open air; he gives an average of nine minutes and a half.

No	Animal.	Time kept under water.	Put into hot bath at 100 deg. and how long.	Period after submersion at which thorax was opened.	Period after submersion up to which the ventricles of the heart continued to contract.
1	A rabbit	4 minutes	No	5th minute	11th minute, removed whilst contracting
2	"	6 "	No	7th "	25th minute
3	"	12 "	No	13th "	35th "
4	"	20 "	No	21st "	26th "
5	"	31 "	No	32nd "	Had ceased to beat when opened
6	Large dog	14 "	No	17th "	" "
7	A rabbit	11 "	No	12th "	16th minute
8	A dog	8 "	No	9th "	34th "
9	A rabbit	5 "	Yes—5 min.	10th "	20th "
10	"	5 "	No	11th "	Had ceased to beat when opened
11	"	6 "	Yes—4 min.	10th "	30th minute
12	"	6 "	No	12th "	30th "
13	"	8 "	Yes—5 min.	13th "	Had ceased to beat when opened
14	"	10 "	Yes—5 min.	60th "	" "
15	"	10 "	No	60th "	" "
16	A dog	8 "	Yes—5 min.	15th "	" "
17	A rabbit	6½ "	Yes—5 min.	12th "	18th minute
18	"	6½ "	No	13th "	Had ceased to beat

The chief morbid appearances observed in the animals not put into the hot bath, differed in some important points from those found in the animals which were so treated. In the former, the colour of the lungs was but little altered, their large

vessels were not much distended, their substance was less crepitant than natural, and they contained a large quantity of serous fluid. The right side of the heart and the pulmonary artery were much distended, and the left ventricle and auricle contained a small quantity of blood. The blood was black and fluid throughout the body, but coagulated when removed from the vessels. The arteries contained a small quantity of blood. On opening a pulmonary vein, or one of the large systemic veins, a considerable flow of blood always took place. It was observed during the examination of the animals, that, whilst the heart was beating, and even after it had ceased to beat, on dividing a pulmonary vein, blood flowed and continued to flow for a long time, and that the distension of the cavities of the right side of the heart became much diminished, the blood flowing freely through the vessels of the lungs.

Of the animals submitted to the influence of the hot-bath, the general results were as follows:—The lungs were much more discoloured than when the bath was not used; their large vessels were more distended, and their substance firmer and heavier; the left side of the heart was loaded with blood as well as the right. In some instances, the blood was coagulated in the vessels of the lungs, in the systemic veins and in the cavities of the heart, and in all there was more or less of this condition observed. When a vein was opened, the flow of blood was often arrested by the presence of coagula, and was very rarely free.

In no instance did the hot-bath produce a respiratory effort.

From the above experiments the following deductions are made:—

1. That in dogs and rabbits, when asphyxiated by submersion, the ventricles of the heart do not as a rule cease to contract "in a few minutes after the cessation of the functions of animal life;" but that in many instances their action continues for a very considerable period, and that in all probability the same remark applies to man, and serves to explain how recovery has taken place after lengthened submersion.

2. That the effects of the hot-bath are, to produce great congestion of the lungs, and a tendency to coagulate, in the blood; its use becomes thus *directly* prejudicial; that it does not excite respiratory efforts, and prevents artificial respiration being properly carried out; and it becomes thus *indirectly* prejudicial.

With reference to the treatment of asphyxia, from whatever cause, all our efforts should be made to excite respiratory movements, and if these movements can be produced before the heart has ceased to beat, there is great probability of animation being restored; and even should the action of the heart have ceased, it is *possible* that by re-exciting respiration we may reproduce the circulation.

In attempting to produce artificial respiration the best method is that recommended by Marshall Hall. Experiments on the dead body, and numerous instances of recovery from asphyxia, attest its value, and prove it to be the most simple and efficacious means we know of. If artificial respiration be attempted when the body is supine, the tongue should be drawn forwards and kept so; this has not been sufficiently attended to.

The rules for restoring suspended animation recommended by the Humane Society are defective. Their object is to restore circulation and warmth by means of the hot bath and hot air, neglecting or only imperfectly carrying out, artificial respiration, on which alone safety depends. Moreover, the directions involve very serious loss of time. Few, if any instances, are recorded by these societies, in which animation has been restored by the means recommended after a submersion of more than five minutes—a fact not to be wondered at when we consider what these means are.—*Liverpool Medico-Chirurgical Journal, July*, 1857, *p.* 253.

114.—RESTORATION OF PERSONS APPARENTLY DROWNED.

ROYAL HUMANE SOCIETY'S INSTRUCTIONS:—

SEND QUICKLY FOR MEDICAL ASSISTANCE.—*Cautions.*—1. Lose no time. 2. Avoid all rough usage. 3. Never hold up the body by the feet. 4. Nor roll the body on casks. 5. Nor rub the body with salt or spirits. 6. Nor inject tobacco

smoke nor infusion of tobacco. I. Convey the body carefully, on its face, with the head and shoulders supported in a raised position, to the nearest house. II. Strip the body, and rub it dry; then wrap it in hot blankets, and place it in a warm bed, in a warm chamber free from smoke. III. Wipe and cleanse the mouth and nostrils. IV. In order to restore the natural heat of the body: Move a heated covered warming-pan over the back and spine. Put bladders or bottles of hot water, or heated bricks, to the pit of the stomach, the arm-pits, between the thighs, and to the soles of the feet. Foment the body with hot flannels. Rub the body briskly with the hand; do not, however, suspend the use of the other means at the same time, but, if possible, immerse the body in a warm bath at blood heat, or 100° of the thermometer, as this is preferable to the other means for restoring warmth. V. Volatile salts or hartshorn to be passed occasionally to and fro under the nostrils. VI. No more persons to be admitted into the room than are absolutely necessary.

If apparently Dead from intense Cold.—Rub the body with snow, ice, or cold water. Restore warmth by slow degrees, and after some time, if necessary, employ the means recommended for the apparently drowned. In these accidents it is highly dangerous to apply heat too early.

General Observations.—On the restoration of life, a teaspoonful of warm water should be given; and then if the power of swallowing be returned, small quantities of wine, or diluted brandy, warm. The patient should be kept in bed, and a disposition to sleep encouraged, except in cases of apoplexy, intoxication, coup-de-soleil. Great care is requisite to maintain the restored vital actions, and at the same time to prevent undue excitement.

The *Treatment* recommended by the Society to be persevered in for *three* or *four* hours, as it is an erroneous opinion that persons are irrecoverable because life does not soon make its appearance, cases having come under the notice of the Society of successful results even after five hours; and it is also absurd to suppose that a body must not be meddled with or removed without the previous permission of a Coroner.

Dr. Marshall Hall's Instructions.

1. Treat the patient instantly, on the spot, in the open air, exposing the face and chest to the breeze (except in severe weather).

I.—*To clear the Throat.*—2. Place the patient gently on the face, with one wrist under the forehead [all fluids and the tongue itself then fall forwards, leaving the entrance into the windpipe free]. If there be breathing wait and watch; if not, or if it fail—

II.—*To excite Respiration.*—3. Turn the patient well and instantly on his side, and 4. Excite the nostrils with snuff, or the throat with a feather, &c., and dash cold water on the face previously rubbed warm. If there be no success, lose not a moment, but instantly—

III.—*To imitate Respiration.*—5. Replace the patient on his face, raising and supporting the chest well on a folded coat or other article of dress. 6. Turn the body very gently on the side, and a little beyond, and then briskly on the face, alternately, repeating these measures deliberately, efficiently, and perseveringly fifteen times in the minute, occasionally varying the side [when the patient reposes on the chest this cavity is compressed by the weight of the body, and expiration takes place; when he is turned on the side, this pressure is removed, and inspiration occurs]. 7. When the prone position is resumed make equable but efficient pressure, with brisk movement, along the back of the chest, removing it immediately before rotation on the side [the first measure augments the expiration, the second commences inspiration].

The result is—respiration, and, if not too late, life.

IV.—*To induce Circulation and Warmth.*—8. Meantime rub the limbs upwards, with firm grasping pressure and with energy, using handkerchiefs, &c. [by this measure the blood is propelled along the veins towards the heart]. 9. Let the limbs be thus warmed and dried, and then clothed, the bystanders supply the requisite garments. 10. Avoid the continuous warm bath, and the position on or inclined to the back.—*Med. Times and Gazette, June* 13, 1857, *p.* 605.

115.—ON EXCITATION AND FRICTION, AS AIDS TO MEDICINE.

By Dr. John W. F. Blundell.

The cases which demand *local* excitation are familiar even to unprofessional people. Take, for example, those where stiffness and immobility of joints and articulations are the most prominent features. Here, of course, the discrimination of the medical man is required to decide between such conditions and those of actual anchylosis. In the latter case no human power can avail; but on the other hand, I may state emphatically there never was and never will be a "stiff joint," or accessible portion of the frame, rendered immovable by interstitial depositions —the result of inaction on the patient's part—that cannot be, by patience and perseverance, entirely restored. To this end friction plays an important part, but by no means the sole part in the cure. I need not say that these, when accomplished, really are *cures—bonâ fide*, unmistakable. The conditions, therefore, upon which the cure of stiff joints and the like depend, are three-fold; viz., innervation and vascular activity resulting from friction, passive extension of the limb or tissue, and energetic attempts at motion on the part of the sufferer.

The system of friction adopted both before and since Mr. Grosvenor's time, is very simple and easily understood. The primary object being to produce *excitation* of the part, brisk rubbing, with a certain degree of inunction, both to favour the play of the hands and prevent erosion of the skin, are necessary. In thus rubbing, it is more efficacious, and less tiring to the operator, to make long and brisk strokes,—one hand ascending whilst the other descends. The inunction, as a simple protection, may consist of fine flour, vegetable or animal oils, in not too great quantity; these frictions to commence, as to time, according to the ability of the patient to bear them, and may be usefully extended from half-an-hour to three hours daily. Most of my readers may have smiled over the popular notion of the efficacy of "joint oil," where it is needless to attribute the good result to the simple process of friction. It is yet an instinctive and harmless belief of the uneducated classes. The methods for producing *motion* of the affected part will appear under that heading; I shall, therefore, call attention to the class of cases where the former is applicable.

Friction is contra-indicated in all scrofulous cases where suppuration appears to be inevitable; yet, before such symptoms exist, it may be used with equal safety and success. In all cases where inflammation is actually existing, or but slowly subsiding, except such as may be observed in what are termed inflammatory gout and rheumatism; and here it should at the same time be held as a maxim of the deepest importance, that the earlier it is resorted to on the subsidence of inflammatory action, the more speedy, certain, and lasting will be its results. In anchylosis it is barely necessary to say it can be of no service; yet there are many cases of false anchylosis, and, probably, many where that fatal natural necessity might have been obviated by timely and judicious application to one, at least, of the mechanical methods,—viz., *friction*, *pressure* or *percussion*. The instances where friction is fairly indicated, lie in all the earlier stages of *stiffening*, so to speak; for, subsequently, the only effectual means of cure is too often to be sought in *percussion*. These are comprised by local paralysis, sprains, fractures, wounds to ligaments and tendons, excessive secretions of synovial fluid, all interstitial deposition of blood or fluid, care being taken that there exist no severe inflammatory symptom. Indeed, wherever the circulation in such cases is languid, these means must be resorted to, or the individual may in all future time be hopelessly debarred some one essential function of his framework. Every sufferer should be strenuously forewarned of this,—if the baneful effects of ignorance, obstinacy, and idleness, are to be counteracted. I repeat, *all* contractions of joints not anchylosed, can be restored, in time, perfectly and effectually. The rule of rubbing is to begin very gently at first; and in all cases where it is intended to bring parts into a state of normal activity, friction should precede motion,—or, what is more readily comprehended, the first attempts at motion. The latter, of course, will be of the passive kind: where there are adhesions, they must be broken down,—after the usual plan adopted by surgeons. It is also a most necessary method to pursue, both after orthopœdic operations and primary ruptures, or other injury to tendons;

whilst without it, there is no chance of restoring the natural tone and secretion of *bursæ*,—that is, after all symptoms of inflammatory action shall have subsided within them. These latter important agents in the mobility of a muscle or limb, are too often lost sight of. Nor should the same treatment be neglected, even where painful rheumatic affections exist, or inability either to extend a limb or place it upon the ground; for both conditions will wonderfully disappear by gentle and assiduous rubbing. An excellent example of this is afforded in cases of acute *gout*, where relief is almost immediately experienced by the patient after friction, which must at first be commenced at a distance from the affected or inflamed part, gradually approaching it as the pain subsides. The result is so certain, however indisposed a person may be to permit the remotest attempt at touching the irritable member, that many a sufferer may, if the process be early commenced, look for a good instead of a bad night, and a speedier termination of the fit, as well as after-contractions,—thickening and deposition being entirely obviated. I speak of this merely as an aid to other internal medicinal measures. In this instance the friction must not be employed in the usual way, but the hand must be passed lightly upwards,—that is, *from* the seat of inflammation, gradually approaching the part inflamed, when such appears to be the effect produced upon the vessels leading from the seat of pain: even the part itself, the great toe for example, can be safely submitted to the operation. But if not performed slowly, carefully, and gently, it is an operation that may meet with rather an unfavourable response on the part of the gouty patient.

It was a remark of the celebrated Lord Bacon, that "men quarrel with the humours which are not at fault, the fault being in the very frame or mechanic of the part." He might have justly said the same of the neglect of so important an agent as friction; for it is apparent that there is a power possessed both by the nerves and arteries of a part to produce, on the application of friction, a great and instantaneous change in its circulation, independent of any impulse derived from the heart. More than this, the heart has been, as it were, reached by these means, for a man has been recovered after hanging half an hour,—the neck of course not having been dislocated. The phenomena exhibited by frictions, especially in the relief of local pains, are very striking. It has oftentimes seemed to me as if, by exciting local nerve stimulus remote from the seat of pain, we calm, by counter-irritation probably, the existing hyperæsthesia. Dr. Struthers, of Edinburgh, observed a similar indication, for he mentions the effect of the application of a few leeches in inflammatory affections of the abdomen, when general bleeding was out of the question. The late Dr. Parry, of Bath, largely enforced these principles of exciting local action; and this is why friction to the abdomen is so useful in cases of obstinate constipation, accompanied of course by active movements to the muscles of that region.—*Medical Circular, Sept.* 30, 1857, *p.* 157.

116.—ON THE ESCHAROTIC ACTION OF SULPHATE OF ZINC.

By Dr. Eben Watson, Surgeon to the Royal Infirmary, Glasgow.

[In those cases of old callous ulcers with elevated margins and pale unhealthy granulations, Dr. Watson has tried with success various plans of treatment, all of which accomplish the same end, though in somewhat different ways. Such are Syme's plan of applying a blister over the whole surface, and the application of solid nitrate of silver and dilute nitric acid.]

I have chosen several cases of very callous ulcers, for a trial of the sulphate of zinc as an escharotic, and shall now state the results of this trial.

Case 1.—The first case in which it was tried was that of a man who had five callous ulcers on the left leg, apparently of syphilitic origin.

On the 20th January, an ointment, consisting of anhydrous sulphate of zinc, mixed with glycerine, was spread upon bits of lint the size of the ulcers, on which they were then laid; they were retained in apposition with the sores for eleven hours, during which the man suffered very acute pain, and when the dressings were removed the parts beneath were found corroded. A poultice was applied and opiates freely administered, but the pain continued very severe for several days

and nights; by the fifth day the sloughs had all separated, they were peculiarly tough and leathery in their consistence, and about ¼th of an inch thick; the surfaces thus exposed were healthy and granulating, they speedily rose to a level with the neighbouring parts, and became skinned over so as to diminish the size of the ulcers fully one-half; but owing to some cause which I cannot satisfactorily explain, and which was probably of a constitutional nature, the healing process was then arrested, and on the 3rd of March most of the ulcers remained still uncovered, but filled up with indolent granulations, while in one case these had been partially destroyed by secondary inflammation.

Case 2.—In this case the ulcers were larger; they were situated on both legs, of fully a year's duration, and also of apparently syphilitic origin.

January 21st. Ointment of sulphate of zinc, the same as in former case, was applied on lint over the ulcers; the pain occasioned was so great that the dressings were removed in an hour and a half after their application; the ulcers were, however, already corroded; poultices were applied and opiates administered. Two days afterwards the sloughs began to separate, and the sores were then dressed with camphorated oil, over which poultices were applied. By the 25th all the sloughs had separated; they were thinner, but of the same character as those in the other case; the surfaces exposed were healthy and granular, and by February 3rd they are reported to be "nearly closed." In a few days afterwards the patient was dismissed cured.

Case 3.—The powder of the anhydrous sulphate of zinc was sprinkled over an old and callous ulcer of leg; it caused immediate and very acute pain for five hours, when a draught of morphia put the patient asleep; he awoke free from pain; the ulcers were corroded and rendered brown on the surface; beneath this crust they rapidly healed without the separation of more than a very small slough, which left a healthy granulating surface. In this state the man was dismissed at his own request.

My friend, Dr. M'Ghie, had the sulphate of zinc fused and run into moulds, and in this form it was applied to several ulcers, acting as a good but very painful escharotic. On the suggestion of the same gentleman, I gave a trial to the bisulphate of potash as an escharotic. I employed it in the form of powder, and also in that of an ointment with glycerine, but its action was found to be very feeble; it gave little pain indeed, but the sloughs were very slight and long of separating. I then used a mixture of the sulphate of zinc and bisulphate of potash; this mixture acted more powerfully than the bisulphate alone, but its action was probably due to the presence of the sulphate of zinc, the other ingredient only acting as a diluent. In one case I had the powder of sulphate of zinc mixed with gypsum, in the manner in which Dr. Ure long ago applied the chloride of zinc, and I believe this to be a useful mode of applying it; the action of the escharotic is thus rendered more gradual, and perhaps less severe than when applied in any other form.

In two cases I procured the removal of syphilitic warts, one in the neighbourhood of the anus and the other on the prepuce, both covered with skin, by the action of the sulphate of zinc; thus showing that that escharotic will destroy the skin if kept in contact with it for a sufficient length of time.

The idea of attempting to destroy by escharotics certain tumours, and even cancerous ones, of greater size than those just referred to, is by no means a new one, and the practice has been defended on various principles. Thus Dr. Ure thought that the substance of cancer consisted chiefly of albumen, and that, as the chloride of zinc had a strong affinity for that proximate principle, it was fitted to search it out among the tissues of the affected part, in a way that no surgeon could do with his knife. But, unfortunately, other and more recent analyses of cancerous matter do not bear out the opinion of Dr. Ure; and, on the other hand, the substance of most of the tissues and organs with which cancer is usually mixed consists normally, in great measure, of albumen; besides, we have it abundantly in the blood, circulating in the vessels of the part. On Dr. Ure's supposition, therefore, of chemical affinity, no selection could be made by the chloride of zinc between healthy and unhealthy parts. This is equally true of the sulphate as of the chloride of zinc. In whatever way it destroys the life of tissues, there is no selection made between the normal and the abnormal. There is no

sparing of this part or that; but all are involved in the same destruction, until the destroying agent loses its power, or is removed.

It may be asked if, after all, the sulphate of zinc is capable of removing such a tumour, for instance, as a cancerous mamma; and my answer would be, that it is capable of such an action if the applications are very frequently repeated in immediate succession, so as to maintain the destructive action for a sufficient length of time. But the pain endured by the patient during this tedious process must be far greater than that of excision of the affected organ. In the latter case, chloroform may be used to free the patient entirely from the pain of the operation; and afterwards, in the great majority of cases, the pain of the wound and of its dressing is very little complained of; while, on the other hand, the pain of the escharotic is prolonged over far too long a time to admit of the employment of chloroform for its relief. Indeed, from what I have seen of the action of the sulphate of zinc, I am tempted to think that it is both too painful and too slow an agent to be used for the purpose above referred to, and that the chloride is more likely than the sulphate of zinc to be the chief ingredient in the empirical applications so much vaunted of late. It must be admitted, however, that the process of so-called cancer-curing is now well known to be both slow and excruciatingly painful—a fact which rather tends against the opinion just expressed, as to the nature of the escharotic agent in the mystical paste. That opinion was founded on the comparative suitableness of the two substances named; but perhaps such an argument has not much weight in reference to an empirical nostrum invented and applied by ignorant persons.

With regard to the question of the superiority of escharotic applications over the knife of the surgeon, there is no doubt in my mind, and I believe there will ere long be no doubt in the minds even of those who are at present forsaking the consulting rooms of scientific surgeons for the abodes of charlatans and cancer-curers. No escharotic can extirpate the disease more surely than the knife, in any case suitable for interference by the surgeon at all. While the disease is local, while the system is little or not at all affected by the cancerous poison, surely the removal of the whole organ affected, when performed by a person capable of judging of the soundness of the parts in which he cuts, gives a more rational prospect of cure than leaving the extirpation to the blind operation of a tedious and indiscriminate chemical agent of destruction. Yet I do not mean to say that there are no cases of cancer in which I should use escharotics; but I would restrict their employment to cases in which no thorough extirpation of the growth was to be attempted, and in which the healing, or, at all events, the modification of some cancerous ulceration was the sole object in view. For this purpose I believe the sulphate is perhaps as suitable as the chloride of zinc; but I cannot say that I think it at all superior.—*Glasgow Med. Journal, April*, 1857, *p.* 46.

117.—ON SOME OF THE USEFUL APPLICATIONS OF THE PERMANGANATE OF POTASH.

By Dr. G. F. Girdwood.

[The permanganate of potash possesses both deodorant and escharotic properties;—its use was first suggested to the author by his son, Mr. Prout Girdwood, as very suitable in a case of cancer of the os uteri, where the offensive discharge was extremely distressing to the patient.]

At Prout's suggestion I now employed it in the double capacity of deodorant and escharotic, to destroy the fœtid odour and to check the exuberant granulations, and induce a healthy appearance of the ulcerated surface. I employed it as a lotion, twenty grains to the pint, injected frequently during the day, and was much pleased with the comfort given the patient by the efficacy of this agent.

Being so well satisfied with it in this lady's case, I was induced to employ it in the case of a naval officer of rank then under my care, afflicted with cancer of the breast, a malady to which he is unhappily hereditarily predisposed. Here also the application has been most serviceable. Its application as a powder, sprinkled on the sloughy mass, or as a lotion, (ten grains to the ounce) to the surface of the

wound, has not been attended with pain. From a gaping sore, in most offensive condition, it has occasioned the wound to assume, in some parts, a disposition to granulate. The odour of the apartment previous to the employment of the permanganate was so offensive as seriously to compromise the comfort of the admiral's family. This inconvenience is entirely removed.

In the case of a barrister, of great talent but irregular habits, I was consulted, in the spring, respecting a most unhealthy eroding ulcer on the thigh. It was one of those foul ulcers we meet with in constitutions broken down by syphilis or intemperance, and where the dyscrasis is so great as to baffle the ingenuity of the profession to restore a healthy action in the system. The permanganate was here applied as a lotion, and was most efficacious in removing the slough, cleansing the sore, and inducing healthy action.

An elderly female, long afflicted with caries of the tibia, which, from the offensive odour generated by this condition of bone, prevented her performing the duties of her position in life with any comfort to those around her, has enjoyed perfect freedom from this annoyance ever since she has had recourse to the permanganate as an application to the leg.

A married young woman, of a scrofulous habit of body, applied to me with a foul sore on the shin as big as a florin. I thought it not unlikely there might be a syphilitic taint in the system, superadded to the scrofulous taint she inherited, so the general treatment was in accordance with this view of the matter. The wound was cauterized with nitrate of silver from time to time, at each application giving much pain. Recollecting that, in the second case I have narrated, the application of the permanganate as a powder gave no pain, I tried it in this case; but the pain was as great as if I had used the lunar caustic. The difference was no doubt referable to this fact, that in the former case the cancerous mass was a mass with diminished sensibility, whilst in the latter case the prurient granulations had increased the sensibility.

A gentleman, aged forty-five, full six feet high and large in proportion, and of a most placid temper, holding a judicial appointment in India, returned home early this year to attempt to recruit his broken-down constitution. His sedentary duties had been too much for him. He had been seized, whilst on the bench, with symptoms of low congestive fever accompanied by dyspnœa and general œdema. These symptoms had been followed, in four-and-twenty hours, by a blackened state of the calf of the leg, which rapidly became gangrenous; and an extensive ulceration, involving the middle of the leg round and round, and removing much of the muscular as well as all the cuticular structure, was the result.

This extensive injury had, by the time of his arrival in this country, become somewhat less extensive by the process of cicatrization; but as he was obliged to be on his legs on his arrival more than was beneficial, he found himself obliged to lay up; and when I saw him, I feared a relapse into a state as serious as that he originally had, and of which he produced a very interesting and detailed medical report from his attendant in India. The odour from the leg was most offensive. The surface of the wound presented a most unhealthy appearance, whilst the blackened condition of those parts where cicatrization had taken place made me anxious as speedily as possible to remove this condition of congestion.

Rest and position were of course, under these circumstances, the elementary principles of relief; but, in addition, the lotion was again here applied, of the strength of four grains to the ounce, and I cannot sufficiently express the benefit I witnessed—the prurient granulations were kept down, the offensive odour removed, and cicatrization went rapidly on.

The foregoing statement indicates the variety of cases in which the permanganate of potash may be applied. It may be remarked, that I have used the remedy generally as a lotion, but although I have not found it necessary, for the purposes I have generally required, to use the remedy in a stronger form, I would recommend when it is wished to destroy masses of cancerous growth, its use in the solid form, either as a powder, as I have done, or in a mass, as the sulphate of copper or other caustics. The lotion supersedes all the charcoal, yeast, and carrot poultices. Let this simple solution—make it as weak as may be thought requisite to effect the object—two to twenty grains, or more, if liked—be used on a piece of lint, instead of any of these applications.

The permanganate of potash is more useful than any of the other compounds of manganese and potash as a caustic or deodorant. The permanganic acid contains more oxygen than the manganic. The permanganic acid has the composition $M N_2 O_7$, whilst the manganic acid has a composition $M N O_3$.

As the escharotic action of these bodies, as well as their deodorant quality (a quality which has been long known to chemists), depends on the ease with which they part with the oxygen with which they abound, clearly that preparation which yields the larger quantity of oxygen must be preferable: this is the permanganic acid as permanganate of potash.

As a deodorant, as an escharotic, as a stimulant, it is a most useful application, combining as it does all these three qualities. But as a quality still to be claimed in its favour is the ease of its exhibition as a lotion applied to, or in powder sprinkled on, the sore, or as an injection. To conclude, I may say that whilst from the foregoing relation its advantages have been attempted to be illustrated, its use is also suggested in every sort of case where it is desirable to combine all the qualities this agent so beneficially possesses. In such cases, for instance, as old chronic ulcers, warty growths, syphilitic sores as a caustic in the primary stage, or in gonorrhœa as a stimulant injection.

I have mentioned that Mr. Blyth originally brought the substance under my notice as a deodorant. I have used it in the manner he advised me, and have found it most admirably adapted for the office. A teaspoonful of the substance powdered, added to a tablespoonful or two of water, just enough to moisten it well, and sufficient to cover the surface of a flat dish,—a dinner-plate, for example, being used for the purpose,—giving a broad surface for absorption, and this plate placed under the bed or anywhere most convenient in the sick chamber, all odour disappears. Let it be borne in mind in favour of this substance, as an advantage above those in general use in the sick chamber, that it has no odour of its own. Vinegar and chlorine and nitrous acid gas are often of themselves a nuisance; whilst destroying one odour they create another; but the permanganic acid has none. It only destroys; it does not create. I have employed it in my stable and in other places engendering odours. All these odours are destroyed by the dish containing the solution. This solution does not require frequent change. Has it lost its original beautiful purple colour? Has it become black and slimy? If so, renew it, but not till then.

The permanganate of potash was introduced some time ago as a remedy in diabetes, so that it is well known to chemists. Mr. Blyth informs me it may be purchased (wholesale and cheap) at the Battersea Chemical Works; but for professional purposes, as an escharotic in strong solution or in the solid form, it may be obtained from most of the respectable chemists.—*Lancet, Sept.* 12, 1857, *p.* 269.

118.—*On Phosphorus as a Poison.* By Dr. C. W. Bingley, Lecturer on Chemistry to the Sheffield School of Medicine.—[The following observations are founded on experiments made by the author some months since, in concert with Dr. Harley, of University College, London.]

From the results of these experiments, I conclude that phosphorus may act, in the first instance, as an irritant poison in exciting inflammation of the mucous membrane of the stomach, not being so active an irritant, however, as either arsenic or corrosive sublimate; but from the symptoms immediately preceding death, I incline to the opinion that this poison bears considerable analogy to strychnine in the manner in which it acts upon the animal frame—not by a direct action upon the nervous system, as was formerly supposed, but by preventing the assimilation of oxygen by the constituents of the blood. From the analyses of the blood, flesh, brain, heart, liver, and lungs of the animals poisoned by phosphorus, we saw that phosphoric acid was present in abnormal quantity. It therefore appears that the phosphorus enters into combination with oxygen in the stomach, to form phosphoric acid, and it is doubtless as such absorbed into the blood. The inflammatory action in the mucous membrane of the stomach would most probably take place during the slow transformation of the phosphorus into phosphoric acid in that organ. Dr. Harley has shown, by direct experiment, that

strychnine and some other poisons possess the property of so modifying the organic constituents of the blood as to render them incapable of absorbing oxygen, and exhaling carbonic acid, and thus becoming fitted for the purpose of nutrition; and pointed out how they may in this manner produce convulsions, and ultimately destroy life. I imagine that phosphorus, like many other poisons, acts upon the blood in the manner ascribed by Dr. Harley to strychnine, and thus in a similar way destroys the life of the animal.—*Lancet, June* 13, 1857, *p.* 601.

119.—ON THE ADULTERATION OF BREAD AS A CAUSE OF RICKETS.

By Dr. John Snow.

[Rickets is a disease very prevalent indeed in the metropolis, generally shown by curvature of the bones of the leg. The author some years back noticed that the complaint was by no means confined to the poor, but affected the middle classes to a considerable extent; nor to the most sickly and scrofulous children, for healthy well-nourished children often suffered most. Another remarkable fact, showing that want of exercise, of good food, and a scrofulous taint, are not the most powerful operating causes, was that in the northern towns of England this disease was far less common than in the metropolis, although the same apparent causes were in operation.]

The bones owe their hardness to phosphate of lime, which exists ready formed in many articles of food, and only requires to be assimilated, while in rickets the phosphate of lime in the bones is known to be deficient; and therefore it seemed extremely probable that the want of this earthy salt in the food of the infants of this metropolis was the chief cause of the soft state of the bones. My attention was naturally directed to milk, which contains one chief supply of phosphate of lime, and which is somewhat scarce and dear, and not of the best quality in London; but I immediately recollected that in some of the mining and manufacturing districts in the northern counties of England milk was scarcely used at all in the families of the operatives, and yet I had hardly seen a case of curvature of the legs from rickets. On reflecting on the subject of bread, however, there seemed to be something which might explain the prevalence of this complaint in London. In the northern counties, where coals are cheap, it was the universal custom for every family to bake their own bread, and I believe still remains so; whilst in the south of England it is as much the custom to buy bread from the baker. Now, the bakers, so far as I have examined, all put alum in their bread, whilst this is never done in domestic practice, and the flour dealers rarely adulterate the flour with this substance. They are liable to a heavy penalty for adulterating flour, but the law is never enforced against the bakers. I have never examined a specimen of flour which contained alum, or a specimen of baker's bread which did not contain it.

When my attention was first turned to the subject of rickets, I thought it likely that the sulphuric acid of the alum would decompose the phosphate of lime of the wheat, and form sulphate of lime, which would not be available as nourishment for the bones; and I formed an intention to investigate the question both chemically and statistically; but this intention was long postponed, on account of other engagements and inquiries. In the meantime, and without any regard to the question of rickets, Liebig has inquired into the action of alum in bread, and his investigation will justly have more weight with the reader than any inquiry of mine. He says, "Since phosphoric acid forms with alumina a compound hardly decomposable by alkalies or acids, this may perhaps explain the indigestibility of the London bakers' bread, which strikes all foreigners."

It is evident from the above passage that Liebig has ascertained that alum decomposes the phosphate of lime of wheat, and it is not likely that the bones would be able to nourish themselves with this salt out of phosphate of alumina and sulphate of lime; and where bakers' bread forms the chief and almost the only article of food, as it does amongst the children of the working classes in London and many other towns, one might expect the bones to be ill-nourished, as regards their earthy and hardening material. This appears to be the actual fact, as far as

I have been able to extend my inquiries. The subject is capable of being decided by an exact numerical investigation, but I have thought it better to publish my inquiry in its present imperfect state, than to wait till I should be able to make such a complete research as I could wish, more especially as, by directing the attention of the profession to the question, it may be earlier decided. I expected to be able to contrast some of the large institutions containing young children in this metropolis with each other; but, so far as I have inquired, they are all supplied alike with bakers' bread containing alum. So far as I have been able to learn, rickets are not common at present in the towns in the north and west, where home-made bread is chiefly used; and I was lately told, that in one town in Cornwall, where the people make their own bread, this complaint is almost absent; whilst in a town a few miles off, where bakers' bread is consumed, the complaint is extremely common; but as my inquiries have been only of a colloquial nature, I hesitate to mention places and persons. If it could be obtained, perhaps a return of the number of cases of rickets in the children under four years, as compared with the whole number, which are brought to the dispensaries, in towns where respectively the people buy chiefly flour or ready-made bread, would best help to decide the question.

It does not follow, if my conclusions are correct, that every child eating bread adulterated with alum ought to have rickets, or that every child fed with good bread ought to be free from the complaint; for, on the one hand, the other articles of food may often supply sufficient phosphate of lime without that of the bread, and, on the other hand, derangement of the digestive and urinary functions may prevent the phosphate of lime being assimilated when present. What we might expect, however, would be precisely what we observe—that rickets would be much more common in the children of the working classes fed almost entirely on bread than in those who have a greater variety of food. It can also be explained how the bones ultimately become hard from the gradual accumulation of the scanty supply of phosphate of lime derived from milk, potatoes, and other articles of food, whilst that which ought to be supplied in the bread is still withheld.

If the deformity in the bones of the legs does not proceed too far, it has a great tendency to diminish, and even disappear, as the children grow up; and the artificial support which is afforded by iron instruments and splints, both in the various hospitals for deformities, and under the advice of private medical men in London, diminishes very much the amount of permanent deformity which would otherwise be met with.

In my examinations of bakers' bread I have been much struck with the apparent universality of the practice of using alum, and with the large quantity employed—a quantity between twenty and thirty times as great as that usually stated by authors. I have met with alum, not only in the ordinary bread sold by bakers, but also in captains' biscuits, and in the so-called farm-house bread; and I was somewhat surprised to find that the high-priced bread, sold in the fashionable neighbourhood to the west of Regent-street, contained more alum than the cheap bread sold in many of the poorer districts. I found that the bread supplied to me last autumn contained 10·13 grains of alum in 500 grains—i. e., 561 grains, or more than an ounce and a quarter in the 4lb. loaf; whilst some bread obtained from a very noted baker contained 11·37 grains in the 500 grains, or nearly an ounce and a half in the 4lb loaf. The following is a brief account of the analysis of the latter bread:—500 grains being carefully dried at the temperature of 100° Fahr., lost 128 grains of water, or more than one fourth. Being carefully incinerated in a crucible, the ashes weighed 5·85 grains. The ashes yielded alumina, which, being washed, dried, and ignited, weighed 1·2 grain, representing 11·37 grains of crystallized alum; with chloride of barium, they yielded 1·4 grain of sulphate of baryta, and with the nitrate of silver, 6·7 grains of chloride of that metal, representing 2·8 grains of common salt.

Dr. Hassall and some other authors have very properly pointed out that the only safe way to seek for alum is to incinerate the bread, and examine the ashes; but many writers go on repeating the statement that alum may be found by digesting the bread in distilled water, filtering, and applying tests to the water. In this way seldom more than a trace of alumina can be detected, even when the bread con-

tains a large quantity; but it is probable that many persons take this short and easy method of examining it, and it is probably in a great measure owing to this circumstance that the bakers continue to use alum with so much impunity. An instance came under my notice not many months ago where a baker expected, with the utmost confidence, to have a satisfactory certificate to lay before the committee of a club-house respecting his bread, although it contained a great quantity of alum.

A probable way to break through what seems the universal practice of bakers to adulterate bread, would be for the committees of the public hospitals and the guardians of the poor to oblige the bakers who contract to supply their respective institutions to furnish an unadulterated article. No one pretends that alum is either nutritious or wholesome; and if the loaves without alum should cost a little more, owing to their carrying less water, no one can doubt that as much nutriment would be obtained for a given sum as under the present system.—*Lancet, July 4, 1857, p. 4.*

120.—A CASE OF ARSENICAL POISONING BY A DECORATIVE WALL-PAPER.

By Dr. W. Hinds, Birmingham.

[The following particulars were communicated to the author in a personal interview with the gentleman who is the subject of them.]

In the early part of last year (1856) a gentleman in business in one of the central parts of Birmingham, and being in perfect health, as were also those about him, had two parlours newly papered with a bright green paper. In less than a week afterwards he became ill, but knew no cause for his illness. Both himself and his wife sat in one of the rooms regularly, burning a gaslight, the days being not long. At the same time also as his own illness came on, his wife became ill in a similar manner, and was occasionally confined to her bed. The symptoms complained of were severe prostration of strength, headache, and a low febrile state of system, together with an inflammatory state of the conjunctiva, thirst, loss of appetite, and heat and dryness of throat, with tightness across the forehead. The great inaptitude for exertion, and general prostration of strength, appeared prominent.

Not only were these two persons thus indisposed. A parrot hung up in the same room also became ill. It manifested thirst and languor, refused its food, and seemed constantly drooping. A while after these unaccountable symptoms made their appearance, or about the time, a friend, who happened to have some knowledge of my own case previously, was solicited, quite accidentally, to admire the paper with which the rooms were just before decorated, and he at once pronounced the paper to be an injurious one. The owner, however, could not believe that there was or could be anything pernicious in the wall-paper, and after enduring the illness for two or three weeks, resolved to leave home for the benefit of his health. He went off to Ramsgate for a change, where he stayed a week, and returned home in perfect health. His wife remained at home, and got no better.

It is remarkable that in two days, as I am assured by the gentleman himself, he became as ill as ever, and then first began to dawn the conviction that the observation about the wall-paper was founded in fact. This conviction soon gained ground by the very force of circumstances. It was indeed a conviction truly forced upon him directly against his will, and became seriously earnest, as he had by this time got really alarmed for his own and his wife's welfare. Having borne these distressing symptoms for several weeks, they at last determined to have the whole of this new paper removed from both their rooms, and I am assured that they recovered their health in less than a week afterwards.

While it appears so difficult to convince many persons speculatively of the fact of the pernicious agencies of this arsenical wall-paper, it is very remarkable that in the case of this gentleman, who was so disinclined to believe, the conviction which he has derived practically is deeply rooted, and seems to have been ratified by the very force of his suffering.

While, probably, very few persons would predicate such effects as have been detailed, from the papers decorating their rooms, I have reason to believe that a

vast deal of slow poisoning is going on in Great Britain from this cause, these injurious results being never traced to their true source.

It remains to say a few words on the *modus operandi* of the diffusion of the poisonous agent. Writing exclusively to communicate the facts to the profession, I did not on the former occasion think it necessary to give any detailed explanation, inasmuch as the scientific members of the profession were as well able as myself, if not indeed more so, to fill in these minor particulars for themselves. There can be no doubt that arsenical vapours, whether pure or in certain combinations, inhaled in respiration, get readily into the blood, and are capable of producing all the constitutional effects which are the result of absorption of arsenic from the alimentary canal. Diarrhœa is not so usually a symptom in these cases, it at present appears, as when arsenic has been taken into the stomach; and that is just what we might presume would be the case as to the early periods at least, or in cases of slow poisoning through the medium of respiration, inasmuch as the irritant is not primarily in contact with the alimentary canal. On the other hand, we have the well-marked signs of a severe local irritant in other parts, just such as the arsenical dust would be expected to produce, namely, irritation of the air passages, the nasal passages, the conjunctivæ, the mucous membrane of the throat, and of the frontal sinuses, yielding the severe frontal pain and tightness, the hot and dry state of the posterior nares and throat, and the epiphora.

That the water-colour pigment forming the patterns upon a wall-paper is constantly yielding dust to the atmosphere of a room can admit no question. A puff of wind or an ordinary current of air floats off myriads of particles, especially during the process of drying, either when the paper is new, or whenever dampness from the weather may have subsequently affected the paper and its colour. In some papers which I have examined there seems an almost entire absence of tenacity, as if the pigment was stuck on with water merely. A dry napkin just rubbed lightly over the green patterns will exhibit abundance of the colour-dust, and even where the gummy or glutinous constituent of the colouring agent be in sufficient quantity, there is no doubt that the patterns still lose gradually their tenacity to some considerable extent, and especially by alterations in the hygrometric state of the atmosphere.

It may have been known, possibly, to others in this country; but until after my attention was directed to this subject in my own case, I was not aware that this very matter is taken cognizance of by the Prussian sanitary police. In an instructive periodical work, I have lately met with some observations on this subject by Dr. Scoffern, and I give the following very interesting passage:—

Dr. Scoffern observes, "As you intend to reside some considerable time in the Prussian dominions, you will, perhaps, set about papering your rooms. Take care in doing this you do not give the police cause to pounce down upon you. What evil can there be, you will, perhaps, say, in the papering of a room? Learn, then, for your instruction, that the Prussian police are, amongst other things, sanitary officers. Each nest or squad of them,—excuse the German names,—has its own Polizel Physicus, or Police Sanitary Physician, whose duty it is to see that nothing be done to the prejudice of the laws of public health. An Englishman whom I knew took it into his head to hang his sitting-room with paper of a certain green tint. To be in a chamber whilst the paper-hanging operation is going on, is not agreeable. The Englishman absented himself, until the time when he thought the hanging would be complete. He then came back, and was surprised to find the chamber, not merely hung, but unhung. The police had sent people there to strip the paper off. The green pigment, which the Englishman had so much admired, was a preparation of arsenic, Scheele's green; and for this reason it was considered to imperil the public health. A rather far-fetched notion was this; but I know the event to be true."

In a note to the above, the writer remarks, "Whilst the above was still in type, uncorrected, a fact has transpired proving that the Prussian sanitary officers were right, and that my surmise of the idea being far-fetched was wrong. A medical gentleman of Birmingham writes to the editor of a journal to state that he had suffered from sitting in a room papered with arsenical green hangings. The heat of a gas-flame evaporated the pigment, and filled the room with deleterious fumes."

In a former paper, I alluded to two characters by which the arsenical green paper could be recognised—at least, by a practised eye;—namely, the elegant brightness of the pigment, and the imperfect way in which it usually adheres to the paper when closely examined, showing a little "running," as if put on a somewhat greasy surface. It is proper, however, to mention, that in many of these arsenical papers which have come under my observation neither of these characters is very evident, the two characteristics relating to the colour only in its purity. I often see these papers, with the natural tint of Scheele's green made lighter by means of mixing a little whiting or some such substance, in order to contrast with a very dark green flock, which forms portions of the pattern or ground, and this modification of the colour appears to make the arsenical green "take" more kindly to the surface of the paper.—*Med. Times and Gazette, May* 23, 1857, *p.* 521.

121.—ON TESTING FOR ANTIMONY AND ARSENIC.

By Henry Hough Watson, Esq., Corresponding Member of the Literary and Philosophical Society, of Manchester.

Owing to the extreme facility there is in applying Reinsch's process, and the great delicacy of it in separating arsenic and antimony from organic matter containing them, it has, of late years, generally been resorted to by chemists and toxicologists, almost entirely to the neglect of Marsh's process, in investigating the numerous cases of poisoning by arsenic which have occurred; and there has been no difficulty in proving the metal deposited upon the copper to be arsenic, when the coated copper was heated in a subliming tube (the arsenic being thereby oxidised and converted into arsenious acid), and when, afterwards, the ammoniacal nitrate of silver, the ammoniacal sulphate of copper, and the sulphuretted hydrogen tests were applied; but as till within the last year, attention had not been directed to cases of criminal poisoning by antimony, equally easy and direct means were not known of proving, by indubitable results, that a coating or deposit obtained on copper was antimony. Dr. Odling has, however, in the last volume of 'Guy's Hospital Reports' (vol. ii., Third Series), described a method, discovered by him, of oxidising and bringing into solution a deposit of antimony, in such manner that all the striking and decided characteristics of this metal can be readily and satisfactorily elicited; and perhaps every chemist, whose attention has been drawn to Mr. Odling's paper, will admire and highly appreciate his process; but, it may be questionable whether any can so completely prize it as those who have had cases of poisoning by antimony to investigate both before and since its publication. I am one of the few who have had to detect and prove the presence of absorbed antimony in the tissues in case of poisoning before and since the publication of the paper; and I feel that I cannot too freely acknowledge the superior value of the aid rendered by the process over the other more complex means I had to adopt previously. Yet, though beautifully simple and eligible, as Dr. Odling's process is, consideration of the principle on which it is founded has led me to the discovery of another method, at least equally simple, and, I think, generally, even more eligible, except, perhaps, when the deposit is so thick, as to crack off the copper. But, before explaining, it may be well to contrast the position we were in up to the time when the last volume of 'Guy's Hospital Reports' appeared with the altered one since.

It seems that the Palmer trial was the first criminal case in which Reinsch's process had been used for separating antimony from the tissues; and in that instance Dr. Taylor heated the copper, on which he had got the antimony deposited, with nitrate of soda in a platinum crucible, thereby converting the antimony into antimoniate of soda, which he dissolved or diffused in water, acidulated with hydrochloric acid; and he then precipitated by sulphuretted hydrogen; but, instead of obtaining a precipitate of a decided orange-red colour, which is desirable, as characteristic of the pure sulphuret of antimony, he obtained one of a reddish brown colour, undoubtedly the sulphuret of antimony mixed with some sulphuret of copper; and, therefore, not so satisfactory as an orange precipitate

would have been in confirmation of the results of the other tests which he applied. Aware of this, I was induced to pursue another course in testing the antimonial deposit I obtained on copper in a case tried at the Liverpool Assizes in August last (Regina v. McMullen). And, as my proceedings in that inquiry have not been published, a somewhat detailed account of a few of the experiments may here be acceptable, more particularly as application has been made to me by several scientific inquirers for information as to the method I pursued on the occasion.

In one experiment I dissolved 7555 grains of the liver, by boiling it in diluted pure hydrochloric acid; and in the hot solution I immersed bright sheet copper, the surface of which was about twenty-two square inches. The copper was kept in the hot solution for four hours, when it was found to have acquired a comparatively thick coating of a violet lead-coloured metal. It was then washed and dried; and, on bending it, some of the coating cracked and fell off it. The quantity which thus fell off weighed a quarter of a grain. I dissolved this quarter of a grain in nitro-hydrochloric acid, and evaporated the solution to dryness; I dissolved the dry residue, by the addition of hydrochloric acid, and to this hydrochloric solution water was added, which caused a bulky white precipitate—the sub-chloride of antimony; but the liquor contained some copper, which was evident from the colour of it; and, therefore, I separated the white precipitate from the liquor, and washed it well, to free it as perfectly as practicable from the liquor. I then dissolved the white precipitate by the addition of solution of tartaric acid, and passed sulphuretted hydrogen gas through the solution, whereby a precipitate of sulphuret of antimony, of a tolerably pure orange-red colour, was obtained. These several results gave full, satisfactory proof that the coating which cracked off from the copper contained antimony. I also passed sulphuretted hydrogen gas through the solution, or liquor separated from the white precipitate, and a nearly black precipitate of sulphuret of copper was obtained. This sulphuret of copper appeared to be nearly as much as the orange sulphuret of antimony; from which I concluded that only about one-half of the quarter of a grain of the coating might be antimony; but the quarter of a grain was only about one-half of the coating on the whole of the twenty-two inches of copper.

After the twenty-two inches of copper had been removed from the solution of the 7555 grains of liver, I immersed three other pieces of copper in the same hot solution, consecutively, for four hours. In each instance I got a coating upon the copper, strong upon the first of the three pieces, and weak upon the last. From their appearance, I concluded that there could not be less than another quarter of a grain of antimony deposited on them; and I believed that from the whole of the 7555 grains of liver I had separated half a grain of antimony, making the total in the whole liver (which weighed four pounds) about 1·85 grains, equal to rather more than 4·9 grains—say to 5 grains—of tartar emetic.

The orange sulphuret of antimony, obtained as mentioned, was dried, and then dissolved by heating it in strong hydrochloric acid. I introduced the solution, along with diluted sulphuric acid and zinc, into Marsh's apparatus; and the flame of the gas produced gave deposits of metallic antimony upon a Wedgewood's ware pestle applied to it; which deposits did not dissolve with strong solution of chloride of lime.

In another experiment, in a solution of about one-eighth of the whole liver in diluted hydrochloric acid, I immersed a piece of pure zinc (after having further diluted the solution with water so much as to make it act but feebly on the zinc), and kept it in the solution for four days, at the expiration of which time it had acquired a dark-coloured or soot-like coating of or containing antimony; for, when the zinc so coated was put into Marsh's apparatus with pure diluted sulphuric acid, the gas produced gave deposits of metallic antimony, not soluble by the application of chloride of lime. The result of this experiment was a valuable corroboration of the results indicative of antimony from the other experiments.

Dr. Odling's process, published since the trial of M'Mullen, consists in first boiling the coated copper in solution of permanganate of potash with a little excess of potash for a few minutes, by which the antimony becomes oxidised, and the oxide is dissolved by the excess of alkali; then filtering the solution, slightly acidulating it, and passing sulphuretted hydrogen gas through it; the truly characteristic orange red precipitate being thereby produced, which may be collected

and further tested in the usual manner. It will be perceived how much more directly the orange precipitate is obtained by this process than by that I had to adopt in M'Mullen's case. As Dr. Odling remarks, one ebullition, one filtration, and one reaction, are all that are required for the complete identification of the antimonial deposit; that is, so far as it can be identified merely by the orange-red precipitate. But, as it is, of course, requisite to test the purity of the potash and of the permanganate of potash used, so as to see that they do not contain antimony, it occurred to me that an advantage would be gained if one of these ingredients could be dispensed with, if the antimony could be oxidised, and the oxide dissolved in solution of potash, without the aid of permanganate of potash or any other salt. Accordingly, I introduced some copper, having antimony deposited upon it, into a subliming or reduction tube, and then heated to redness that part of the tube where the copper was; the usual white amorphous oxide was formed and deposited in the tube. I then took the copper out of the tube, and poured in a very dilute solution of caustic potash. On boiling this solution of potash, the oxide soon became dissolved. I then filtered the solution, acidulated it with pure hydrochloric acid, and passed sulphuretted hydrogen gas, obtaining the true orange red precipitate of sulphuret of antimony. I have repeated the experiment many times with the same success; and I have further found that when copper, having a mixture of antimony and arsenic deposited upon it, is similarly heated in the subliming tube, it is easy to prove the presence of both metals in the sublimate formed; for instance, distilled water boiled in the tube, repeatedly, dissolves the arsenious acid from the oxide of antimony, arsenious acid being discoverable in the solution by the ammoniacal nitrate of silver, the ammoniacal sulphate of copper, and sulphuretted hydrogen; and then dilute solution of potash boiled in the tube dissolves the remaining oxide of antimony, the presence of it in the potash solution being discoverable by the orange red precipitate again resulting after filtering, acidulating, and passing sulphuretted hydrogen.

Thus far my object was attained, to the extent of being able to abandon the use of the permanganate without substituting any other oxidising salt; but it will be observed that I had to make two heating operations—one, the heating of the dry coated copper, and the other, the boiling to dissolve the oxide in the alkaline solution. Though two heating operations are not particularly objectionable, yet I felt desirous of obviating the necessity of more than one; and a few trials showed that the object may be practicably and conveniently effected. Thus, copper coated with antimony is put into a tube, and a very dilute solution of caustic potash is added. The solution is boiled with the copper in it; and then the tube is so inclined that the copper slides out of the solution (or it may be drawn out by a copper-wire) into the part of the tube where the solution is not, and allowed to remain there for a few seconds or a minute or two; after which it is returned into the solution (kept boiling hot) for a minute or two, when it is again caused to be out of the solution and in the air in the tube for a short time. This alternate immersion of the copper in the boiling liquid and the exposure of it to the air, is frequently repeated till the colour and altered appearance of the copper inform us that the antimony has been oxidised and dissolved off it. The solution is then filtered, acidulated with pure hydrochloric acid, and subjected to the action of sulphuretted hydrogen gas, when the true orange red sulphuret of antimony precipitates, as in the other instances. By the exposure of the coated copper alternately to the hot solution and (while itself warm) to the air, the oxidation and solution of the antimony go on rather quickly; so much so, indeed, that only from a few minutes to about half an hour is required for the solution of the whole of the antimony; the length of time, between these limits, varying according to the density and quantity of antimony upon the copper.

By the exposure of copper (coated with antimony) made wet with cold solution of potash, and exposed to cold atmospheric air, a similar effect is produced; but the time required for the complete change is too long for the operation in the cold to be made available in preference to that in which heat is applied. In an experiment made in the cold, not more than half the antimony was dissolved in thirty hours.

My attention was next turned to experimenting upon copper coated with arsenic. I exposed some alternately to the action of boiling dilute solution of potash

and to air in a tube; and, as might be expected, the arsenic became oxidized, and dissolved in the solution. It, however, was not converted merely into arsenious acid, but into arsenic acid; for, after filtering the alkaline liquor, I slightly acidulated a portion of it with diluted nitric acid, and then added caustic ammonia till rather in excess; after which I evaporated to dryness, dissolved the dry residue in a few drops of water, and tested with nitrate of silver, which gave the brick red precipitate indicative of arsenic acid. I acidulated the other portion of the alkaline liquor with hydrochloric acid, and then passed sulphuretted hydrogen gas, which did not immediately cause any yellow precipitate, but in a few hours I observed that a light yellow precipitate was slowly forming, and in twenty-four hours a considerable quantity of a bright lemon-yellow precipitate had fallen and covered the bottom of a half-ounce phial, in which I had corked the liquor up to keep in the sulphuretted hydrogen and exclude atmospheric air. The slow formation of the yellow precipitate confirmed the nitrate of silver test in showing the metal to have been converted into arsenic acid.

This fact, of the conversion into arsenic acid, can be taken advantage of in separating antimony from arsenic when both have been deposited on copper by Reinsch's process. What is required is to oxidize and dissolve the mixed deposit by the alternate action of boiling dilute solution of potash and exposure to the air in the tube, then to filter the solution, acidulate it, and pass sulphuretted hydrogen gas through it; and as soon as the orange precipitate of antimony has begun to collect itself together and settle, to take out this antimonial precipitate by filtering, setting aside the clear filtered liquor in a cork phial, whereby, in some hours, the bright yellow sulphuret of arsenic falls.

When the deposit of antimony or arsenic is so thick as to readily crack off and not adhere to the copper, I think it is preferable to pursue the method in which the two heating operations are required; or else to adopt Dr. Odling's permanganate process; for if the deposit falls off the copper in scales or films when in the alkaline liquor, I do not find it practicable to pass the scales or films alternately out of and into the liquor as required. It, however, generally happens that in those instances when the greater part of the deposit does fall off, still a sufficient quantity adheres to the copper to allow some of it to be dissolved, and its character proved.

In a case of poisoning which I have had to attend to since the commencement of this year, I have submitted copper coated by Reinsch's process (in the examination of various portions of viscera) to the action of permanganate of potash, &c., as directed by Dr. Odling's discovery; and I have also submitted other portions of copper, coated at the same time from the same viscera, to the several other methods of oxidising and dissolving the coating in potash solution herein described; and in each instance obtained the true orange red precipitate, proved to be the sulphuret of antimony by dissolving it in strong hydrochloric acid, and thereby producing a solution, one part of which when diluted with water gave a white precipitate soluble in solution of tartaric acid; and the other part of which when introduced into Marsh's apparatus, along with zinc and diluted acid, yielded deposits of metallic antimony, on porcelain and glass, not soluble by the addition of chloride of lime, or of a mixture of chloride of lime and acetic acid.

I feel that I ought not to conclude this paper without expressing thanks to my friend Dr. Taylor, of Guy's Hospital, for the kind intimation he has made to me that, when only a small quantity of arsenic is obtained along with a relatively large quantity of antimony, from viscera into which these metals have entered by absorption, a serious question arises as to whether the small quantity of arsenic may not have been accidentally introduced as an impurity in tartar emetic; saying that, within the last few years, he has met with this in so many instances that the fact is calculated to create alarm; and that a maker has informed him that arsenical sulphuric acid (the acid made from pyrites) is sometimes used in forming the sulphate employed in the manufacture of tartar emetic. This being so, there are two possible sources whence arsenic in tartar emetic may be derived—one from the antimonial ore used, and another from the sulphuric acid. It is quite time that such general use of the impure sulphuric acid for pharmaceutical purposes should be prohibited; and I cannot but direct attention to the

facts mentioned in a paper of mine, "On detecting the presence of arsenic," published fifteen years ago, in the sixth volume, new series, of the Memoirs of the Manchester Philosophical Society, and copied into the 'Medical Gazette,' of June, 1842. I therein stated that I had detected arsenic in sulphate of potash, and also in alum, made by the use of pyrites or sulphuric acid; and I suggested the probability that food might, consequently, in some instances, be contaminated with arsenic, as alum is often used by bakers in the making of bread; remarking, also, that vinegar is often adulterated with sulphuric acid.—*Med. Times and Gazette, June* 20, 1857, *p.* 613.

122.—ON A PHYSIOLOGICAL ACTION OF QUININE.

By Dr. Ranke.

[Dr. Ranke, during the course of some observations on uric acid, has made the following curious and important observations on the effect of quinine on the amount of that urinary salt excreted.]

Being engaged in a series of observations on the excretion of uric acid in health and disease, and under the influence of different drugs, I have observed an action of the disulphate of quina upon the healthy organism, which seems to me worth being recorded even before I shall be able to give the results of my other observations and experiments.

I found, as the uniform result of five experiments which I have made on three healthy individuals, that the disulphate of quina diminishes the quantity of uric acid in the urine.

The importance of this action of the drug, if it prove to be constant, is obvious. Hitherto our notions on the physiological action of quina have been exceedingly deficient, and so is our knowledge of the real nature of ague, for which quina is such an admirable remedy. Now in ague there is, according to all observers, a considerable increase of uric acid in the urine, and moreover the spleen, the organ principally affected in ague, contains, according to Scherer, normally, some uric acid. Is it not possible that, by the study of the physiological action of quina, we may in time be able to throw some light even upon the nature of ague and the process of its cure?

The usual method was employed for the determination of the uric acid: that is to say, 100 cubic centimetres of the urine were mixed in a test-glass with 6 cubic centimetres of concentrated hydrochloric acid, and left to stand the forty-eight hours. Then the uric acid, which had been precipitated, was carefully collected upon a filter. The weight of the filter in a perfectly dry state had been determined in the watch-glass apparatus. The uric acid was washed until the water that ran off the filter had ceased to have an acid reaction. The filter was then again dried in the air bath and weighed, and the difference between the first and second weighing was calculated as uric acid.

The following are the numbers I thus obtained, and from these the reader may draw his own conclusions. I excrete, on an average, when in a healthy state, and living on a mixed diet, 0·629 grammes of uric acid during twenty-four hours. This average is taken from twenty observations. Maximum, 0·832; minimum, 0·455; and the figures of this series are distributed thus: 0·8 and 0·7 occur twice each; 0·6 eight times; 0·5 seven times; and 0·4 once.

Now, in the first experiment I took 20 grains of disulphate of quina in the course of the day; and during the next forty-eight hours the excretion of uric acid amounted in all to 05·42 grammes, which gives for twenty-four hours 0·271 grammes, or less than half my normal quantity.

The second experiment gave a similar result, the quantity of uric acid excreted during forty-eight hours, after 15 grains of quina had been taken, being equal to 0·790 or 0·395 for twenty-four hours. On the third day, after quina had been taken, I excreted again about my normal average, namely, 0·621 grammes, and on the two following days 0·543 and 0·656 grammes respectively. I now took quina for a third time, and the quantity of uric acid again fell to 0·438 grammes on the first, and to 0·192 grammes on the second day.

The fourth and the fifth experiments were made on two of my medical friends who kindly volunteered to take quina. Here are the results.

Dr. S. excreted during the two days previously to his taking quina 0·544 and 0·543 grammes of uric acid. On the third day he took 20 grains of disulphate of quina, in two 10 grain doses, and on that day he excreted 0·376 grammes of uric acid. The next morning he again took 5 grains of quina, and the quantity of uric acid subsequently fell to 0·317 grammes. During the three following days he excreted 0·483, 0·450 and 0·654 grammes respectively.

Dr. M. excreted during the four days prior to his taking quina 0·662, 0·774, 0·585, and again 0·585 grammes of uric acid. Then he took 10 grains of quina, and on that day excreted 0·358, and on the next 0·387 grammes of uric acid. On the third day after he had taken quina the uric acid rose again to 0·670 grammes, and remained there stationary, amounting to 0·671, and 0·668 grammes on the two following days.

To the foregoing statement I have to add that in two of the experiments I have also determined the other constituents of the urine. The solids in general, and the urea, I found not materially affected under the influence of quina, but the phosphoric acid appeared to be augmented. However, these points require a good deal of further investigation, and I therefore abstain here from giving details.

I hope to read very soon that others have repeated the experiment, and that we shall thus get more materials towards arriving at the truth.

To those who might be inclined to repeat the experiment, I have to add one or two remarks. There are occasionally persons met with who, though apparently in good health, excrete uric acid with great irregularity, the maximum and minimum being widely separate from each other; such persons should not be used for the experiment, as it would be necessary in these cases to take the average of a great many observations in order to obtain reliable results. Moreover, it is advisable to take during the time of observation not too much fluid, as great dilution of the urine tends to make the determination of the uric acid less accurate.—*Med. Times and Gazette, May* 30, 1857, *p.* 537.

123.—*The Lead Wire Suture.*—Mr. Spencer Wells used it last week at the Samaritan Hospital in a case of vesico-vaginal fistula, in order to close a fissure which had remained after the partial failure of a previous operation. The edges of the fissure having been vivified, the wire was passed by a curved needle, the end of which is so made that the wire can be screwed into it. The wire is very soft and flexible, and as soon as it is passed the ends are twisted together by a pair of blunt forceps. These can be cut off at any length, and so doubled up on each other that no scratching or irritation is produced. Mr. Wells applied two of these sutures in the case just alluded to with the greatest ease, and the wire was twisted until the parts were brought into accurate apposition.—*Medical Times and Gazette, May* 30, 1857, *p.* 540.

124.—*On the Medicinal Effects of Ammonia and its Preparations.* By Dr. T. Ogier Ward.—Ammonia had never been considered to be a normal constituent of the blood, as its presence had not been detected except after death in cases of typhus, cholera, melæna, and other diseases of a putrid character, until Dr. Richardson's recent discovery that healthy blood owes its fluidity to the presence of ammonia, which is given off during its coagulation, which process may be arrested, and the fibrine re-dissolved, by the restoration of the alkali. An interesting enquiry here suggests itself: how does the ammonia escape from the body during the coagulation of the blood, and how is it retained in those instances in which the blood remains fluid after death? Assuming the truth of Dr. Richardson's views, Dr. Ward had examined and compared the therapeutic effects of the various preparations of ammonia. He had found that, whether applied externally or taken inwardly, they possess in common the property of dissolving the proteine elements of the blood, whether in the vessels or effused into the tissues.

This similarity in the effect of ammoniacal medicines is owing to their ready decomposition, the ammonia being separated, and forming the chief curative agent, though it is aided by the other substances originally combined with it. Thus its stimulant and solvent action is similar in kind, if not in degree, when used either externally or inwardly in the form of gas, liquor ammoniæ, or combined with carbonic acid, &c. From the utility of these preparations in the treatment of venomous bites and stings, inflammatory swellings, diphtheritis, croup, &c., we may suppose that they will be equally efficacious in urticaria, erythema nodosum, and erysipelas, in which there is an effusion of the fibrinous elements of the blood. In these and other inflammatory diseases and conditions, it is probable that the benefit of the salts of ammonia is owing to their preventing or removing the effusion of fibrine from the inflamed parts. In this way, although the primary action of ammonia is stimulant, its remote effects are sedative or debilitant, as it not only arrests inflammatory action, but, by its resolvent and secernent power, carries the products of inflammation out of the system, and hence its utility in all active febrile complaints. It is to this attenuating property that its use as an antidote to drunkenness and to the stupor of opium is to be ascribed. Its stimulant powers are of use in poisoning by hydrocyanic acid, in the cold stage of ague, and in the retrocession of gout, rheumatism, and the exanthemata, as well as in syncope, hysteria, epilepsy, and convulsions. The hydrochlorate, which is the least easily decomposed, is probably the most useful of the salts of ammonia, as it not only possesses the stimulant, resolvent, and secernent properties of the others, but owing to its combination with chlorine, is endued with tonic powers, by which its prolonged use, unlike that of the other preparations, is attended with invigorating effects both to mind and body; and thus it forms an excellent substitute for mercury in cases where this medicine is inadmissible from its tendency to produce cachexia.—*British Med. Journal, Feb.* 14, 1857, *p.* 137.

125.—*Climates free from Phthisis.*—M. Boudin, chief surgeon of the Roule Hospital (Military) at Paris, has just published a compendious work on medical geography and statistics, including endemic diseases. In this very remarkable book we find the following data on phthisis:—"There are countries where phthisis is unknown, as, for instance, Iceland, as stated by Dr. Schleisner; no phthisical patients are even seen in Finmark; and the Swedish physicians affirm that consumption becomes less common as we proceed northward; there is, in fact, such a thing as a preventing action of the polar regions. In England, statistics show that in the army the maximum number of deaths by phthisis is to be observed amongst the troops quartered in the United Kingdom; that this number diminishes in warm countries, and is lowest in cold climates. As to the civil population of Great Britain, it is found that in London the deaths from phthisis are 18 per cent.; in Edinburgh, 11·9; Leith, 10·3; and Aberdeen, 6·2. The English soldier is more often the prey to the disease in his own country than in any other. The mortality from phthisis amongst the military is lower anywhere else than in England, not only in the south, but more particularly towards northern climes. There are two or three times less cases of phthisis amongst the troops stationed in Canada than amongst those who stay at home. The preventive action of warm climates varies with the longitude; in the torrid zone, for example, the maximum corresponds to the West India Islands, and the minimum to Madras. The sea acts as a preventive of phthisis, and the deaths from this disease are more numerous in the army than the navy. The infantry of the line loses annually by phthisis in the United Kingdom 8·9 men per thousand; the guards, 12·5; and the mortality from the same disease becomes lower in the colonies. At Malta it is below 5 per thousand; in Gibraltar, 4; at the Mauritius and Ceylon, 4; at the Cape, 3; and in the Madras presidency, 1."—*Lancet, July* 25, 1857, *p.* 90.

126.—THE DECILLIONTHS OF HOMŒOPATHY.

Mr. Wharton, an able professor of mathematics and astronomy, has had the

kindness to answer the difficult questions proposed below. His address is 7 Elm Terrace, Queen's Elm, Fulham Road.]

Q.—If homœopathists give, as they profess to do, the decillionth of a grain of medicine, for a dose, and which decillionth can only be obtained by dissolving the grain of medicine in a decillion drops of some liquid—say alcohol—how long would the grain of medicine last, if the population of the world were a thousand millions, and if there were a thousand millions of such worlds, and if each inhabitant lived for a thousand years, and if they each took a dose per second during their whole existence?

And what must be the dimensions of the vessel that would just hold the decillion drops of alcohol?

A.—The number of generations, each subsisting a thousand years, that the grain of medicine would supply with the homœopathic dose to each individual per second, each generation consisting of the 1,000,000,000 inhabitants of the 1,000,000,000 worlds is 31,687,535,943,382,425,811,012,156,738,474; and the whole number of years the grain of medicine would last the inhabitants of those worlds is 31,687,535,943,382,425,811,012,156,738,474 × 1,000, equal to thirty one thousand six hundred and eighty-seven quintillions, five hundred and thirty-five thousand nine hundred and forty-three quadrillions, three hundred and eighty-two thousand four hundred and twenty-five trillions, eight hundred and eleven thousand and twelve billions, one hundred and fifty-six thousand seven hundred and thirty-eight millions, four hundred and seventy-four thousand years!!!

The time it would take the trillion inhabitants of the thousand millions worlds, each counting 500 years per minute, without intermission, to count the *number of years* the medicine would last, is 120,494,090 years.

The vessel that would just hold the decillion drops of alcohol must have its length, breadth, and depth, each 229,995,079,096,540 miles long.

Light travelling 192,500 miles in a second, would require 378 years to travel the length of one of the sides of the cubical vessel that would just hold the decillion homœopathic doses of medicine.

The spherical space which contains the solar system would hold only a very small part of the decillion drops.

The length of the major axis of Neptune's orbit, and consequently the diameter of the sphere, is 5,706,893,200 miles, which light would travel over in eight and a quarter hours.

If the spherical space which bounds the solar system, vast as it is, was increased so as to have its diameter 40,300 times greater, it would be equal in length to a side of the cubical vessel, but would not, of course, hold the decillion drops; for if the sphere was put into the vessel, it would touch it only at five points, or six if covered, and the angular spaces would be empty.—*Medical Circular, July* 29, 1857, *p.* 56.

127.—ON VOMITING—ITS VARIOUS CAUSES AND THEIR TREATMENT.

By Dr. Lees, Physician to the Meath Hospital, Dublin.

Vomiting may be divided, as to its causes, into—1st, Essential; 2nd, Morbific; 3rd, Mechanical; 4th, Sympathetic; 5th, Nervous.

1st. Essential vomiting is caused by some derangement in the natural secretion of the stomach itself, or by congestion, inflammation, or some structural change in that viscus; and may arise in every degree, from the simplest form of indigestion, to the most violent degree of inflammation caused by the action of irritant or corrosive poisons. In scirrhous degeneration, and in every form of ulceration of the stomach, whether simple follicular, perforating, or malignant, and also in that chronic softening of the mucous membrane, which often occurs in the advanced periods of tubercular phthisis, and which is considered by Dr. Budd to take place after death, from the action of the gastric juice, which has been excited by reflex nervous influence. But I do not agree in this opinion, for I think that the symptoms, in most cases, indicate a deranged condition of the mucous membrane of the

stomach, probably an effect of the tubercular diathesis; and you will often find that a drop of creasote, or five to ten drops of medicinal naphtha, with a few drops of compound tincture of cardamoms, will relieve it. Dr. Turnbull recommends in such cases a combination of bismuth with gallic acid and opium; and Dr. Seymour (late Physician to George's Hospital) gives four grains of extract of conium two or three times a day, followed by an ounce of lime-water. The treatment for the other forms of essential vomiting will of course depend on the causes that excite it, and which I have spoken of in the preceding lectures on these subjects; but, as a general rule, a proper regulation of diet is of the greatest importance, which should be given in small quantities (in a liquid or pulpy form), and of the mildest kind. 2nd. Morbific vomiting, under which term I include every case caused by a morbid state of the blood, as we see in scarlatina, variola, erysipelas, purpura, pyæmia, cholera, yellow fever, jaundice, and other diseases, in which an effort is made to eliminate some "materies morbi" from the system, through the gastric mucous membrane. Dr. Budd has alluded to this form, but only with reference to granular degeneration of the kidney; but I think it is applicable to a much greater number of diseases, and deserving of particular attention for its diagnosis, prognosis, and treatment. The history of the case, the nature of the matters vomited, and the condition of the urine, will assist us in our diagnosis, when our treatment must depend on the nature of the case; but as a general rule we should keep up a good action of the skin at the commencement, and in some cases act on the intestinal canal by purgatives, so as to try and expel the noxious material through that channel. 3rd. Mechanical. Under this head I would include those cases of vomiting which occur in consumption, bronchitis, and pertussis, simply from the violence of the cough causing spasmodic action of the diaphragm and other muscles; also cases caused by distension of the stomach from solid, liquid, or gaseous substances; or owing to pressure applied externally on this viscus by an enlarged liver or spleen, or even from stays being too tightly laced. Certain trades also, by requiring a stooping position, and so compressing the stomach, may cause it; and any mechanical obstruction to the passage of food out of the stomach, or during its progress through the bowels, will have the same effect; but in this latter case the peristaltic action of the intestines is sometimes inverted; their contents pass up into the stomach, and then we have what is termed stercoraceous vomiting; that is, matters vomited having the taste, colour, and smell of fæcal matter. This condition is most frequently met with in strangulated hernia, but also in that disease termed ileus, or, "passio iliaca," for which Dr. Seymour recommends two grains of calomel made into a pill with one grain of soft and recent extract of opium, and followed by soda water in active effervescence. In these cases you should try to determine towards the bowels, by means of calomel and aloes, with hyosciamus, and by enemata. If these fail, have recourse to galvanism, which I have seen followed by good results. The period of time (after taking food) at which the vomiting occurs, and the nature of the matters vomited, will be our guides in the diagnosis. 4th. Sympathetic, by which I mean a form of vomiting caused by disease or irritation in some part of the system remote from the stomach, which itself is free from disease. The nausea, in these cases, is generally very distressing; the vomiting very severe, and sometimes uncontrollable till the exciting cause is removed. In some cases the vomiting is merely symptomatic of irritation produced by a natural process, as in that which so constantly occurs in the early periods of pregnancy, which, though in most cases only a temporary inconvenience, the result of sympathetic irritation, yet occasionally becomes so constant and distressing, as to require every exertion in our power to control it, and in many cases has proved fatal; so that the induction of premature labour has been recommended by many eminent accoucheurs, as the only means of saving life. In a lengthened discussion which took place in the Academy of Medicine at Paris, in March 1852, M. P. Dubois (one of the most eminent practitioners in that city) discussed the question with great ability; and after proving the great danger of such cases, ten of which had proved fatal within his own observation, he advocated the practice of inducing abortion, even when there was fever present, as *post mortem* examinations have proved, that even in these cases, there is no evidence of inflammation, either in the stomach or in any other part; and he quoted many cases in which all vomiting and fever had subsided, when the mother had ceased to feel the motions

of the infant, which was expelled dead by the natural efforts, in some days after, when abortion occurred spontaneously. Vomiting is well known to occur as a symptom of disease in the brain, acute or chronic; but the history of the case, the pain of head, the dilated pupil, and the slow, labouring pulse, will generally put us on our guard respecting it. The late Dr. Graves, of this city, has made some important observations on vomiting, as indicative of cerebral disease *in fevers*. He states, that whenever typhus fever, scarlatina, variola, or measles set in with severe vomiting, unaccompanied by distinct evidences of gastric inflammation, it indicates an approaching dangerous congestion of the brain: and "*in all feverish complaints, when, during the course of the disease, the stomach becomes irritable without any obvious cause, and when vomiting occurs without any epigastric tenderness*, you may expect congestion or incipient inflammation of the brain or its membranes." He considers that the very great quantity of bile vomited is characteristic of this form, which he termed cerebral vomiting, and which ought to be treated by leeches to the head, and other remedies for cerebral inflammation. Vomiting may be symptomatic of a calculus in the kidney or ureter, but the diagnosis is seldom very difficult, as the situation of the pain in the region of the kidney, or in the direction of the ureter—its sudden nature and intensity, coincident with severe vomiting, *but a quiet pulse*—will generally enable us to form a correct opinion; but in cases where the vomiting is caused by disease in the kidneys, without any calculus—or even if there be a calculus, and yet so situated as not to cause any pain or tumour—there is often great difficulty in the diagnosis. We must examine particularly into the previous history, and institute a careful inquiry into the present symptoms, as well as a minute investigation as to the state of the urinary secretion, before we can venture on any positive opinion. The following case, which occurred under my care, is a good example of this:—

William Clarke, a car-driver, was admitted into the Meath hospital for bronchitis. On going round the wards, I observed this man vomiting, and, on inquiring as to the cause, he said he vomited constantly, and attributed it to his cough. On investigating the case, I found that he suffered from constant dull pain in the right lumbar region, with severe pains in his feet, and vomited every morning, but passed urine without any annoyance. He stated, however, that he was formerly a soldier, and that in Africa, twenty years ago, he contracted fever, and at that period suffered from some urinary affection, having occasional retention with severe pain in the loins and region of the bladder. He was discharged, and, gradually recovering, continued in good health till about six years since, when he was attacked with severe pain in the lumbar and pubic regions, accompanied by obstinate vomiting, which persisted for three days, when, after violent straining, he passed a small stone by the urethra. The urgent symptoms immediately subsided, and he continued free from suffering till about three months since, when the symptoms of which he now complains made their appearance. The urine was found to be large in quantity, of a pale opaline colour, alkaline immediately after being passed; specific gravity, 1·007, albuminous. A copious deposit of white sediment subsided to the bottom, while an iridescent pellicle floated on the surface. On submitting the urine to microscopic examination, large triangular prisms of the triple phosphate were seen, with amorphous phosphate of lime. I made the diagnosis of a calculus in the right kidney, and put him on a generous diet with dilute nitric acid, and mild counter-irritation to the right lumbar region, under which treatment he was progressing favourably, when unfortunately he was attacked with erysipelas of the face and fauces, which terminated in death. Both kidneys presented evidences of considerable congestion. In the right one, firmly embedded in its substance, there was a calculus the size of a lozenge, elongated, curved at its extremity; and the whole cortical substance of the organ appeared to be undergoing the process of granular degeneration. The mucous membrane lining the pelvis of the kidney and commencement of the ureter was of a dull white colour and slightly thickened. The vomiting was caused, I feel confident, in this case, by the mechanical irritation of the tubular structure of the kidney, owing to the calculus; and in this irritation the stomach participated, through the influence of the splanchnic nerves, from which both the renal and gastric plexuses are derived.

Vomiting caused by the passing of a gall stone into the duct is a good exempli-

fication of the sympathetic form. It generally comes on with sudden, acute pain in the epigastrium or right hypochondrium, attended by distressing nausea, and vomiting of extremely bitter fluid; the pulse is quiet, but jaundice rapidly supervenes, and the pain often ceases suddenly; an indication, in most cases, that the calculus has passed into the intestine. In these cases, as also in those of severe vomiting caused by the passing of a calculus from the kidney, you should give one grain of opium with one of aloes, and one of dried carbonate of soda, or from 30 to 60 drops of the solution of muriate of morphia every hour, till the pain is relieved; watching lest narcotism be induced, though it seldom is while the pain lasts. In some cases I have given a drachm of chloroform with good effect. Dr. Prout recommended bi-carbonate of soda, in doses of one or two drachms, dissolved in a pint of warm water, to be drank repeatedly to allay the vomiting. I have found it useful with the addition of two drops of dilute prussic acid to each dose. Vomiting also occurs sympathetic of ulceration of the os or cervix uteri, whether simple or malignant, in mere derangements of its natural functions, or in rupture of this viscus. It may also occur at the period of rupture of the aorta or heart. Dr. Corrigan has recorded two cases, one of a gentleman who was attacked with vomiting, which returned for three or four mornings successsively, followed by the symptoms and signs of aneurism of the abdominal aorta; and another case of a "lady who was seized after breakfast with violent vomiting and colicky pains, so as to give rise to a suspicion of poisoning; but on examination the heart was found ruptured." Bertin, in his work on diseases of the heart, gives a case of rupture of the heart in which severe vomiting occurred, and he attributes the rupture to the vomiting; but it is more probable that the vomiting and spasm were themselves only symptoms of the impression made on the nervous system by the sudden lesion of such an important vital organ as the heart. In the case of the late Dr. Ball, who died of rupture of the aorta, Dr. Aquilla Smith informs me that vomiting was one of the first symptoms. Vomiting also occurs in diseases of the peritoneum, both acute and chronic, particularly in that form termed tubercular, in which the matters vomited often present a peculiar dark-green or bluish colour (described particularly by Dr. Seymour); and on dissection we find the intestines matted together, and studded over with deposits of tubercle. In these cases the preparations of iodine internally, and the ointment of iodide of lead rubbed over the abdomen, will be found of use. 5th.—Nervous vomiting; by which I mean a form induced by some modification of innervation of the stomach, or independent affection of the gastric nerves, unconnected with any change of structure, or apparent cause of irritation, in either that viscus itself or any other part of the system. We meet with examples of it occasionally in young persons of both sexes, who, without any assignable cause, or from the effect of some sudden or violent mental impression, vomit their food repeatedly; we also meet with it in females the subjects of hysteria. It is, I think, to this form particularly that we may refer most of the cases termed by Sir Henry Marsh "regurgitating," which peculiar condition he considers to be "*essentially* a neural affection," and of which he has given a highly interesting and important account in the 'Dublin Quarterly Journal' of May, 1851.

This form of vomiting often takes place without any warning, or even effort, being in some cases a species of regurgitation, resembling the rumination of certain herbivorous animals; but at other times it is preceded by nausea, heartburn, and accompanied by severe retching. It may occur fasting, when a quantity of stringy matter or bile is vomited; or it may follow the taking of any food, when the chief part is rejected; and it is curious that the most indigestible food is often retained; and though the vomiting may continue for weeks, or even months, yet the loss of flesh is not always corresponding, though in some cases patients have been greatly emaciated. It is generally caused by powerful mental emotion, particularly terror, and its duration is very variable; it may be cured in a few days, or last for months, with occasional intermission, and then cease suddenly. It is very liable to relapse, but seldom if ever proves fatal. The treatment of this disease is often very difficult and uncertain; what succeeds in one case may fail in the next. A proper regulation of the mind is essential for the cure, but it is of great importance to keep the bowels open; and some obstinate cases have yielded when a slight but continuous action has been kept up by mild aperient medicine.

Dr. Parry mentions a case in which everything was rejected by the stomach, even a teaspoonful of cold water; the patient was greatly reduced, when he advised half a grain of aloes to be given every four hours, moistened only by a few drops of liquid. This was retained, and acted on the bowels, when the vomiting (which had lasted for some weeks) ceased in two days. In other cases effervescing draughts with prussic acid or laudanum will succeed; and in hysterical cases, assafœtida, valerian, creasote, will be found useful. When the patients are anæmic, the preparations of iron, quinine, calumba, and quassia may be tried. If there is pain accompanying it, give morphia, hydrocyanic acid, or belladonna. External applications are often useful, as blistering, and the blistered part dressed with muriate of morphia; or excite counter-irritation by croton oil, or tartar emetic ointment. The diet should be carefully attended to; in some cases it ought to be highly nutritive; in others a milk diet would answer best. Dr. Barlow, of Bath, cured a patient who suffered from constant vomiting by restricting her to a diet consisting wholly of fresh-made uncompressed curd, on which she subsisted for several months, and recovered perfect health. There is a peculiar kind of vomit, termed, from its appearance, "barmy or yeast vomit," to which much attention has been latterly directed, in consequence of the discovery in it (by Mr. Goodsir), of curious organisms, which under the microscope appear as square or slightly oblong plates, divided into four equal squares by lines which cross at right angles in the centre, and are again subdivided, so as to resemble a wool-pack, and hence he has termed them sarcinæ ventriculi. They vary from the 800th to the 1,000th of an inch in the length of their sides, and under a high power present a light-brown or yellow appearance. Much discussion has arisen as to whether these bodies are of animal or vegetable nature, but Mr. Goodsir has decided that they are vegetable, belonging to the species called alga. The fluid vomited in these cases is exceedingly sour, slightly turbid, of a light-brown colour, but presents this peculiarity, that it begins to ferment immediately after its rejection, and becomes covered with a brown froth, like that on the top of fermenting wort, and it is in this brownish substance that these sarcinæ are mostly found, along with the torula or yeast-plant. The vomiting generally occurs after meals, preceded by a burning pain in the stomach, and great flatulent distension. The presence of these microscopic plants indicates a dilated condition of the stomach, and fermentation of its contents; and though much importance has been attributed to them, as causing the symptoms and constituting the disease, yet the weight of evidence is in favour of their being merely consequences of certain morbid conditions of the stomach, accompanying a form of fermentation analogous to the *torula fermenti*. As far as we know at present, these organisms are harmless of themselves, but they are generally indicative of some obstruction at the pylorus, causing the retention of food in the stomach, or of very serious functional disease. Dr. Turnbull, who has written a valuable work on this subject, divides the cases in which these bodies are found, into four series or groups, according to their several causes. 1st. Cases in which the pylorus is obstructed by simple ulcers, or their cicatrices, or some other non-malignant disease. 2nd. Cases of cancer pylori. 3rd. Cases in which no disease of the stomach existed, but the pylorus was obstructed by displacement, or some other cause, as by an enlarged liver pressing on it. 4th. Cases of mere functional disease; but even in these cases there is generally some cause (though of a temporary nature) which obstructs the passage of food out of the stomach. It is essentially a chronic affection, and though it may occur in young persons, yet it is most frequently met with in the middle-aged. The bowels are usually constipated, and the urine (in two cases that were under my care) was highly alkaline in the morning, and presented a copious deposit of triple phosphates, with phosphate of lime; while that passed on going to bed was acid, and left no deposit. In these cases want of sleep was much complained of, and I gave the tincture of lupuline, in drachm doses, with good effect. In most of the recorded cases crystals of oxalate of lime have been detected in the urine. As to the treatment for this affection, the detection of sarcinæ in the matters vomited gives us the practical information, that from some cause or another the food remains too long in the stomach, and is not properly digested; we should therefore regulate both the quantity and quality of the food, so as to prevent this delay in the stomach, and the liability to fermentation; tender lean roast beef or mutton, strong

chicken jelly, beef-tea, or mutton broth, in small quantities at a time, will generally agree; milk, and soda-water, sago, arrow-root, and rice are also of use; all fermented liquors should be avoided, and if a stimulant is requisite let them have brandy mixed with cold water. Dr. Turnbull advises the use of unfermented biscuit instead of bread. The chief remedial agents are such as tend to prevent the fermentative process; of these the bisulphite of soda (introduced into practice by Dr. Jenner) is one of the most effectual, for as it is decomposed by almost any vegetable acid, he supposed that the sulphurous acid set free, would stop fermentation and destroy the sarcinæ. His conjecture was right, for the fermentation was checked and the patient much benefited. It may be given in doses of ten grains to a drachm, three times a day, dissolved in water, as it is very soluble, and should be taken soon after meals, as that is the time that fermentation commences. Dr. Budd speaks highly of creasote; a minim in a pill, taken after each meal, will not only check fermentation, but often relieves the severe pain which accompanies it. He also recommends common salt, from one to two tablespoonfuls taken twice a-day, in half-a-pint of water. Alkalies have been used in very large doses by patients, of their own accord; but I think they only afford temporary relief, chiefly by neutralizing the excess of acid generated in the stomach. In most cases, indeed, our treatment can be only palliative, as the causes of obstruction are generally incurable.—*Dublin Hospital Gazette, April* 1 *and May* 1, 1857, *pp.* 101, 134.

128.—ON THE TREATMENT OF DISEASE WITHOUT THE USE OF ALCOHOLIC STIMULANTS.

By John Higginbottom, Esq., F.R.S., Nottingham.

[Mr. Higginbottom believes alcoholic stimulants to be dangerous agents in no case admissible in acute disease, and rendering even chronic disease less manageable.]

Having now discontinued the use of alcoholic stimulants for more than twenty years in my practice, I am induced to bring the facts—the simple facts—before my professional brethren, conscious of the superior efficacy of the treatment of disease without their use, although I believe it to be contrary to the received opinion and practice of the profession, and I know by many it will be considered quite Utopian.

On the Treatment of Typhus Fever without the Use of Port Wine.—I was educated in the opinion that port wine was absolutely necessary in the low and sinking stage of typhus fever; and in order to procure it for my poor class of patients, when I commenced practice, I was desirous of forming a wine depôt with the assistance of my benevolent friends. Soon afterwards, a singular occurrence happened in a village in Derbyshire. The typhus fever was prevalent, and it was observed that a number of the rich patients died, who had been treated with the *artificial* stimulus of wine, and that the poorer lived, who had little else but *natural* stimulants, pure air, pure water, and simple diet. The fact was so apparent, that it was a saying in the village—"The doctors were blamed for killing the rich, and the Almighty was praised for curing the poor." From this simple fact I was induced to try the experiment of treating typhus fever without wine. I had soon a very ample opportunity, for in the month of August, 1813, and the four following months, nearly one-half of my time was devoted to visiting patients with typhus fever in the parishes of Radford and Basford—villages extending from one to three miles from Nottingham.

I may observe here, that at that period the practice of medical practitioners contracting for the attendance on parishes was not prevalent, consequently they did not place themselves under the often degrading surveillance of the guardians of the poor.

My treatment of the fever was to secure free ventilation, cleanliness, and particular attention to the digestive organs; commencing with a full emetic dose of ipecacuanha, aperients, saline medicines, and, in the low state, a decoction of the Peruvian bark (quinine was not then known), and light, simple, nourishing diet.

After finishing my long attendance with this simple mode of treatment, I had

only lost two patients. Both of them had wine given to them, unknown to me, by a family in the neighbourhood. I believe none of the other patients had any wine; I know they had none from the parochial authorities, and I could not learn that any was obtained from any other source. In one family alone, of the name of Dawson, the father, mother, and seven children were all down of the fever at the same time. A nurse from the workhouse and an orphan girl they kept (who did not take the fever) were their only nurses; no neighbour durst approach them. I have not prescribed or recommended wine in typhus fever since that time, now upwards of forty years,and my treatment has been attended with eminent success.

During the autumn of 1848, typhus fever was prevalent in Carrington, a hamlet near Nottingham. The disease was fatal in some cases. I attended, conjointly with my son, twenty-seven patients at one time; several of them had bad symptoms; great depression, delirium, intermittent pulse, &c. The same early treatment of the disease was pursued in the commencement of the fever as before stated; in the low and sinking state, the sulphate of quinine, with the compound infusion of oranges, was given three times during the day, and the strength sustained by mild nourishment, a little given at very frequent intervals night and day; and the result was most successful—all the patients recovered. I believe the wine treatment would have been fatal to several of them. There is no doubt patients often recover in typhus fever, in spite of the wine given, although, *in my opinion, and from my long practice and observation*, its administration in typhus fever has always been injurious, and often fatal in its effects.—*Lancet, Aug.* 15, 1857, *p.* 166.

129.—ON THE ANALYSIS OF STRYCHNIA.

By Ernest P. Wilkins, Esq., Newport.

[In the case which is the subject of these experiments, the patient with suicidal intent took three grains of strychnia. This produced violent convulsive attacks, in one of which he died, six hours after the ingestion of the poison, from asphyxia caused by spasm of the respiratory muscles.]

I forwarded the stomach with its contents (undisturbed) and other viscera (and some blood) to my friend, Dr. Marshall Hall. This he forwarded to Professor Taylor, who has taken the trouble to make an analysis. In a letter to me, he says: "I have waited, however, in order that you might know the results obtained in Edinburgh and Dublin, as well as in London; and I only received the report of Dr. Christison and Dr. Douglas Maclagan yesterday morning. We have all three, acting independently, used a process known as that of Stas of Belgium, which has been found quite inadequate to detect strychnia in the bodies of animals poisoned by a quarter of a grain..

Dr. Geoghegan, professor of medical jurisprudence in the Royal College of Surgeons, Ireland, made a minute analysis of the kidney. He reports that, with the greatest care, he could not detect the slightest trace of strychnia by any one test or property. On subsequently adding a minute portion of strychnia to the residue, it was immediately revealed.

"Drs. Christison and Douglas Maclagan had the portion of lung and liver which you sent. They have examined both, and report as follows:—'The result is, in one word, wholly negative. We worked by Stas' method; everything went smoothly with the manipulations; and eventually not only did the bichromate of potash fail to give any reaction of strychnia, but in no stage of the process—alcoholic, watery, or ethereal—was there the faintest trace of bitterness,' &c.

"I had the assistance of Mr. Scanlan, a good pharmaceutical chemist, who has manufactured the alkaloids. We occupied three weeks in our analysis, operating on, 1st, the blood; 2nd, the heart; 3rd, the coats of the stomach; 4th, the contents of the stomach.

"In the three first, there was not the slightest trace of strychnia, either by taste or by any of the tests. In the dry residue from contents of the stomach we obtained, by one colour test, a slight purple passing to a red colour. The liquid, however, had rather the bitter taste of caramel than strychnia. No crystals of strychnia could be procured. Hence, but for the fact that we knew deceased had died from

strychnia, we should have placed no reliance on this result. In short, when a man's life depended on the answer, I should decline to say that such a result was conclusive of the presence of strychnia.

"I may remark that your case was particularly favourable to the discovery of the poison in an *absorbed* state, if it admits of unequivocal discovery, as the man lived five or six hours, during which time there would have been a much larger deposit (if any) in the tissues, than would occur where death took place in an hour or two.

"You have here, then, the results of men who have been many years engaged in these researches for poison, who can have no interest whatever in altering or suppressing facts, or stating anything but the truth; and, further, the case was one which, above all others, should have shown the 'absorbed' poison, if it could be shown, and the result is this:—A man may die from strychnia; some of the poison may or may not be found remaining in the stomach according to dose and other circumstances, but not a particle of the poison, in an absolute state, will be found in other parts of the body!"—*Lancet, May* 30, 1857, *p.* 551.

130.—*On the Detection of Strychnine.*—Many men have been working with zeal and diligence to open out this obscure subject; but, while honouring all for their motives and such knowledge as they have been enabled to contribute to the general stock, it so happens that circumstances have placed us in a position to watch more closely and continuously the proceedings of, among others, Messrs. Rodgers and Girdwood. These gentlemen have endeavoured to fulfil the conditions we felt ourselves justified in demanding before giving an assent to any conclusions; and it is with satisfaction that we proceed to report, in great measure as eye-witnesses, an outline of their experiments and results, without, however, pledging ourselves to maintain the absolute correctness of the inferences drawn from them. We know, indeed, that grave objections may be taken to some of the material points. These we shall examine more especially in a future number. Our express purpose now is, by giving an exposition of the actual condition of this serious controversy, to stimulate to fresh efforts for its final settlement before another occasion arises for the public exposure of professional differences, which only require due scientific diligence for their determination.

The questions presenting themselves for solution were these: Can strychnine be detected after death, when it has been administered in a dose only sufficient to destroy life? or is it so altered in the process of destruction of life, and subsequent decomposition of the tissues, as to cease to be strychnine? The answer of Messrs. Rogers and Girdwood to these questions is contained in the following summary of conclusions, derived from an extended series of experiments:—

"1. That the opinion that strychnine can only be detected when the poison is in excess, is untenable, and not supported by trustworthy analyses.

"2. That the opinion, that strychnine is decomposed in the process of destruction of life, has no better foundation.

"3. That strychnine can always be detected, when it has occasioned death, in the blood, organs, and tissues of the body, quite independently of the contents of the stomach.

"4. That it is found unchanged in the urine.

"5. That the delicacy of the reactions of strychnine, and its extraordinary stable qualities, render its detection more certain than that of any other poison."

These results are based upon experiments, of which the following are illustrative examples:—A rabbit was poisoned by five successive doses of strychnine, each containing one-thirtieth of a grain. Death followed in about three hours after the first dose, and within half-an-hour after the administration of the last; only one-sixth of a grain was given altogether. The contents of the stomach yielded strychnine in abundance. Half-a-pound of the flesh did the same. It was also discovered in the bones and in the urine.

The blood and contents of the stomach of a dog poisoned by two grains of strychnine were, after putrefaction, subjected to analysis, both yielding strychnine.

The muscles, viscera, and bones of a dog poisoned by a grain of strychnine, were separately subjected to analysis, thirteen months after interment. Strychnine was discovered in every instance.

The viscera, and contents of stomach, of a rabbit poisoned by half a grain of strychnine and five grains of tartar emetic, yielded antimony and strychnine also in each analysis. The body of this rabbit was allowed to decompose, in contact with air, for nine months. When dry, the bones separated, and although the other tissues were almost pulverulent, no difficulty was found in showing the presence of strychnine.

The essential conditions of the process by which these results are arrived at by Messrs. Rogers and Girdwood, are—that it should be capable of disintegrating the substances in which the strychnine is present so completely that it cannot escape solution, and that it should leave the strychnine in a state of perfect freedom from foreign organic matter. These conditions have not been secured by previous experimentalists. Hence their contradictory statements.

The process itself is as follows:—The substance to be operated upon is digested with dilute hydrochloric acid, 1 to 10, until it is apparently fluid; the liquid is then filtered and evaporated to dryness over a water-bath; what remains, treated with spirit as long as anything can be dissolved, and the filtered tincture evaporated as before. The residue must now be dissolved in water and filtered.

This aqueous solution is to be rendered alkaline by ammonia and agitated in a bottle, or long tube, with about ½ an ounce of chloroform. After subsidence, the chloroform is drawn off by means of a pipette, transferred to an evaporating basin, and expelled over a water-bath; the residue left on the basin must then be moistened with concentrated sulphuric acid, and exposed for some hours to the temperature of a water-bath, by which proceeding, all organic matter except the strychnine is destroyed. The charred mass is then treated with water, and the solution filtered to separate the carbon; excess of ammonia is added and the solution again agitated with about 1 drachm of chloroform. If, on evaporating a small portion of this chloroform solution, and acting upon the residue with concentrated sulphuric acid, any charring takes place, the foregoing process must be repeated.

The chloroform solution will afford strychnine sufficiently pure for conclusive testing. For this purpose, a small quantity is taken up in a capillary tube, and evaporated by adding successive drops, on the smallest possible space of a warm porcelain capsule. If the quantity of strychnine in the solution is large, say the 1-2000th of a grain or more, the method pursued in using the re-agent is similar to that adopted by others, viz., moistening the spot, when the capsule is quite cold, with concentrated sulphuric acid, and then adding a minute fragment of bichromate of potash. When, however, the quantity is very small, no colour will be perceived by this mode of testing. Under such circumstances, sulphuric acid, rendered slightly yellow by chromic acid, is said to be found successful.

We may, in conclusion, enjoin a caution against two sources of failure in conducting this test. The common recommendation to stir the spot moistened with sulphuric acid, with a glass rod before the addition of bichromate is to be avoided, because the acid sulphate of strychnine may so be removed altogether; and the operator must be careful not to expose the matter under examination to an intense light, as in his anxiety to watch the colour changes he is too apt to do, the effect of light, in more than moderate amount, being to suspend the chemical reactions.

We cannot exaggerate the importance of these statements to the medical jurist; but we regard as of much importance the extensive spread of information respecting the certain detection of this poison as a means of correcting a popular delusion that strychnine is an agent which the evil-tempted may employ with comparatively small risk of conviction. Let every one, in his sphere, do his part in the prevention of crime.—*Med. Times and Gazette, June* 20, 1857, *p.* 619.

131.—*Instrument for Clinically Determining the Amount of Sugar in Diabetic Urine.* By Dr. A. B. Garrod.—The instrument, named a *Glucometer* (manufactured by J. Coxeter, Grafton Street East), is constructed upon the fact, that glu-

cose or diabetic sugar, when boiled with a solution of carbonate of potash, gives rise to an amber colour, and that the tint is in proportion to the quantity of sugar. The apparatus consists of a standard, a graduated tube of the same calibre as the standard, and an accurately divided minim measure, the standard being filled with a solution of the exact tint produced by a known quantity (half a grain) of the diabetic sugar to the fluid ounce. The following is the method of using the glucometer:—A small quantity of the urine, say half a fluid drachm, either previously diluted or not, according to circumstances readily ascertained, is to be accurately measured in the small minim tube, and mixed with the same bulk of a solution of carbonate of potash of a given strength, and after the measure has been washed out with a drachm or two of distilled water, the whole is to be kept at the boiling point over a spirit-lamp for five minutes, either in a large test tube, or, still better, a very small flask. After cooling, the coloured liquor should be transferred to the large tube, and distilled water added until the tint exactly corresponds to that of the standard,—a process which may be readily effected by holding the tubes side by side, directing them to a moderately bright light. All the required data for determining the amount of sugar are now obtained. Suppose, for example, that the half drachm of urine employed in the quantitative analysis requires to be diluted so as to occupy six and a half drachms before the standard tint is obtained, such urine would contain six grains and a half of sugar per ounce. Again, suppose the urine had been diluted with three times its bulk of water before being employed in the glucometer, which, when the urine is rich in sugar, may be necessary, in order to prevent the graduated tube being of inconvenient length, then it is only required to multiply the amount of sugar by four to obtain the total quantity in the original urine. In the above-named experiment it would therefore be twenty-six grains in each fluid ounce. Dr. Garrod expressed a hope, that by means of the glucometer the clinical determination of sugar might become a matter of little difficulty, and capable of being effected by any one engaged in the practice of medicine; and he also considered that such determinations might prove of great value, not only in ascertaining the amount of disease under which any diabetic subject might be suffering, but also the value of various articles of diet and of different remedies in the treatment of this disease.—*British Medical Journal, Oct.* 31, 1857, *p.* 912.

132.—*On Chloride of Gold and Sodium employed as a Solvent in the Treatment of certain Tumours.* By Dr. ROUAULT.—The author of this communication relates some cases observed by Dr. Debreque and himself, in which it was found that the preparations of gold possess a special elective action in the treatment of glandular tumours. In chronic adenitis in general, and particularly in cervical adenitis, the solvent properties of the preparation alluded to appeared even more energetic and certain than those of iodine. One of the circumstances favourable to its employment is the presence of several tumours, separated or united in the form of a chaplet, or of ganglionic knots. The author remarked that its efficacy was less evident when there existed only a single ganglion, the resolution of which then only takes place with extreme slowness, and often not at all. Gold is also useful in benignant tumours of the breast, such as simple engorgement, hypertrophy, and sub-inflammatory tumours; and it also appeared to Dr. Rouault to be undoubtedly efficacious in certain tumours which were evidently of a malignant nature. The chloride of gold and sodium was the preparation generally employed, being combined with starch and gum arabic, and made into pills. With one of these pills friction was made every evening on the tongue, the gums, and the inside of the cheeks. The friction should be employed for some minutes, and the patient ought not to spit, so as to swallow any remains of the matter which is rubbed in. This plan is to be followed for at least six weeks. Several cases are related in which this plan appears to have been attended with success.—*British and Foreign Medico-Chirurgical Review, July*, 1857, *p.* 228.

133.—ON THE PREPARATION AND THERAPEUTICAL EMPLOYMENT OF SUBCARBONATE OF BISMUTH.

The following is the mode of preparation of the subcarbonate of bismuth described by M. Hannon, Professor at the University of Brussels. The bismuth is first purified by melting this metal in powder with ten times its weight of powdered nitre. After cooling, the metal is again powdered, and mixed with ten times its weight of nitre, and after a second fusion the bismuth may be considered as entirely free from the arseniurets and sulphurets which it almost always contains. Then three parts of nitric acid are put into a retort, and one part of pure bismuth is added. When the reaction is complete, about a third of the liquid is evaporated, then the solution is poured drop by drop into a solution of carbonate of soda, and a white precipitate is obtained, which is subcarbonate of bismuth. The precipitate, after having been washed five or six times with distilled water, is thrown upon a filter, and washed again to remove the last traces of carbonate of soda. It should be preserved in well-stopped bottles. The physiological properties of the salts of bismuth are very little known, for the simple reason that the subnitrate is the only salt which has been employed in medicine. The operation even of this salt is not well understood, as its insolubility offers an obstacle to the observation of the physiological phenomena which might have been observed in the other salts of bismuth, such as the citrate, the tartrate, the acetate, or the carbonate. It is also the insolubility of the subnitrate which renders it inefficient in the greater part of the cases in which it is indicated; and it also occasionally produces a very inconvenient sensation of weight at the stomach. The subcarbonate is soluble in the gastric juice, its action is rapid, it produces no sensation of weight at the stomach, it rarely constipates, colours the stools less than the subnitrate, and may be employed for a long time without oppressing the stomach. The action of the subcarbonate appears to be sedative during the first days of its employment, and subsequently to excite all the phenomena which result from the action of tonics.

As to its therapeutical action, it may be noted that all cases of gastralgia consecutive upon phlegmasia of the digestive passages, cases in which the tongue is red and pointed, and cases in which the digestion is laborious and accompanied with putrid or acid eructations, or in which there is a tendency to diarrhœa or spasmodic vomiting, demand the employment of the subcarbonate of bismuth. The salt is also required in the vomiting of children, whether caused by dentition or succeeding to frequent fits of indigestion, and in the diarrhœa of weak chidren, especially when occurring at the time of weaning. One great advantage possessed by the subcarbonate of bismuth is, that it neutralizes the acids in excess which are found in the stomach. The subnitrate, as is well known, fails always in this respect. In all the cases where the subcarbonate has been taken, the pain in the digestive passages is first found to disappear; then the eructations cease, together with the vomiting or diarrhœa; the digestion becomes less and less laborious, the tongue gradually receives its normal form and colour; and if the use of the subcarbonate is continued, the appetite increases from day to day, the yellow tint of the countenance disappears, and the face becomes coloured at the same time as it ceases to be shrivelled.

The subcarbonate of bismuth is perfectly insipid, and excites no repugnance. It is given before meals. Adults take it in a little water, and children in honey. It may also be made into lozenges. The dose for adults is from one to three grammes, taken three times a day, in increasing doses.—*British and Foreign Medico-Chirurgical Review, July*, 1857, *p.* 229.

134.—*On Incurvation of the Toe Nail.* By Henry T. Chapman, Esq., Lower Seymour Street—[Mr. Chapman has pursued the following plan of operation successfully for many years, but little pain being caused to the patient by it.]

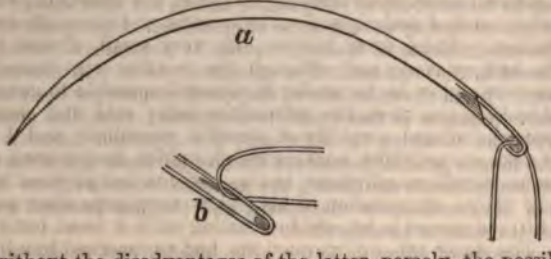
One-third or more of the nail, from its matrix to its free edge, is first divided by a succession of cautious strokes, with a small stout narrow-bladed scalpel, to

avoid wounding the subjacent corium. The knife used for the subcutaneous section of tendons is very well adapted for this purpose, and we may safely rely on the patient giving immediate notice when this sentient structure is reached. The groove through the nail being completed, its free edge is seized by a ciliary forceps, and separated by a few touches of the scalpel from the cuticle uniting it to the tip of the toe. The sheath of cuticle binding down its radical extremity is also raised with the point of the knife. It is easy, then, by a turn of the forceps, to evert the divided edge of the smaller portion of nail sufficiently to introduce the point of the scalpel horizontally beneath it, when, by scraping the under surface of the nail, its connexion with the corium is gradually severed quite up to the matrix, to which alone it should remain attached. A little gentle traction to and fro will now generally complete its removal, and should the process have been attended by any pain or bloodshed, it is commonly so trifling that the patients have invariably walked away, exhibiting scarcely a trace of the limp with which they entered.

During the growth of the new portion of nail, I direct the patient to keep the end of the toe constantly protected by a dressing of some mild ointment thickly spread on lint, in order to soften the nail, and prevent it from becoming rugged, furrowed, and perhaps once more incurved.—*Med. Times and Gazette, Oct.* 10, 1857, *p.* 382.

135.—NEW NEEDLE WITH OPENING EYE.

In the operation now coming into fashion for the relief of prolapsus of the uterus, vaginal cystocele, and rectocele, by perineal suture, as revived by Mr. Baker Brown, since practised by Dr. Savage and Mr. Spencer Wells, and more recently performed by Mr. Fergusson and Mr. Erichsen, some little delay and difficulty have been caused by the needles used for passing the deep sutures intended to support the quills. Mr. Brown and Dr. Savage use the common needle fixed on a handle, which is passed through both lips of the wound made by the removal of skin and mucous membrane. This needle is not passed very easily, and there is a little difficulty in holding the thread with forceps, and withdrawing the needle. Mr. Fergusson avoids this by using a common curved needle; but then he has to cut off his thread, and to tie a knot to form the loop which is destined to support the quill. In order to avoid this loss of time, Mr. Spencer Wells has contrived the needle shown in the annexed cut (*a*). It possesses all the advantages of the open



eye needle, without the disadvantages of the latter, namely, the possibility of impediment in passing it, and the probability that the thread may slip out. To all appearance the eye resembles that of an ordinary needle, but one side of it, as shown here, (*b*) is made to open, so that the thread can be drawn out, the side closing again instantly by its elasticity. Needles on this plan will probably prove useful in other operations. Those used by Mr. Wells have been made for him by Messrs. Whicker and Blaise, of St. James's street.—*Med. Times and Gazette, May* 30, 1857, *p.* 540.

136.—*Plaster of Paris Bandage.*—[This bandage is used at University College *Hospital.*]

It is intended as a substitute for the starch bandage in ordinary use at present, the advantages attributed to it being that it dries much more quickly, and is lighter. The former quality causes it, as it is said, to sit more accurately, as the patient finds it easier to maintain the same position during the shorter period, so that it is free from the creases which are apt to be produced in the starch bandage by involuntary movements; and the patient is ready to be moved much sooner than when the starch is used. This is a point sometimes of importance in military practice. The bandage was applied at Mr. Erichsen's desire by Mr. Gamgee, who had seen it used abroad. It is said to have been in much favour with Pirogoff at Sebastopol. It is made by rubbing dry plaster of Paris well into an ordinary bandage: a number thus prepared can be kept ready for use. The patient's limb is first enveloped in a roller, and over this the plaster of Paris bandage is applied, slightly wetted (to prevent the plaster from shaking off). As each turn is laid on it is more thoroughly moistened, and then lies quite evenly and comfortably. At any part where more support is required, additional strips of the same can be laid on and supported by turns of the principal bandage.—*British Medical Journal*, *Feb.* 14, 1857, *p.* 127.

137.—ON THE THERAPEUTIC USE OF OXYGEN.

By Dr. S. B. Birch.

[The use of oxygen, although chemical science tells us decidedly that it ought to be a most valuable remedial agent, has been much overlooked or ignored by the profession; perhaps partly from its employment involving some trouble and loss of time to the practitioner, partly from the experiments hitherto tried as to its therapeutic properties having been in inappropriate cases, or not properly performed. A gentleman with some hereditary strumous tendency, who had been the subject of secondary syphilis for seven years, consulted the author last year. His constitution seemed greatly shattered from the effects of disease and mercury combined, and reduced still more by severe hydropathic treatment.]

I found him extremely weak and anæmic, his powerful and muscular frame completely relaxed and attenuated; the skin throughout the body was quite blanched, and so transparent as to show deeply beneath the surface *general* dirty-looking congestion, with occasional spots of complete purpura. Some caries of one superior maxillary bone was observed, extending from the alveolar processes of the molar teeth. He suffered much from cerebral irritation, the eyes being suffused, intolerant of light and almost useless, with chronic iritis, and some effusion of lymph of low organization. Pulse from 100 to 112, very small, almost imperceptible; tongue white and relaxed; and, although the weather was tolerably warm, his vital powers were so low as to render it almost impossible to generate sufficient animal heat to keep him alive, the extremities being cold and clammy. In fact, universal prostration and torpidity of function prevailed; and I ought to add that he had a suspicious, short, hacking cough (which had existed some months), with profuse nocturnal perspirations, but no well-marked physical signs of tubercular deposit. Upon examination of his legs, a very large ulcer was seen on one calf, and a little ulcerated point, communicating with a small but deep cavity, on the other. The larger one, he informed me, had commenced in a little spot about a fortnight previously, and had for some days been spreading very rapidly, causing much severe pain and constitutional irritation. It now presents the peculiar appearance of a sloughing mercurio-syphilitic ulcer, exactly circular, about two inches in depth, considerably excavated; the whole circumference, for the distance of an inch and a half or two inches from the edges, is hard, red, and extremely sensitive; there is a discharge of dirty-looking sloughy matter and acrid sanious fluid. In spite of the vigorous and judicious measures advised by an eminent London surgeon, who had been consulted a few days previously, the sloughing ulceration is rapidly extending; and in the excessively prostrated condition of the sufferer the case appears by no means hopeful.

Here an opportunity offered of severely testing the power of oxygen; and knowing what this therapeutic agent could effect in analogous non-syphilitic

ulcers, and in most cases of extreme debility and languid circulation, I at once determined energetically to bring it into action. My patient was ordered to preserve the horizontal position, and to foment, poultice, &c. The same afternoon I administered a large dose of the gas, which had the effect of making him feel more comfortable. The following morning, the ulcer still alarmingly progressing, I carefully superintended the administration of the largest quantity that could be borne, and ordered a moderate inhalation in the evening. From that time it spread no further, and by daily watching my patient during the succeeding fortnight I had the satisfaction to witness the separation of the dead portions, the perfect cleansing of the whole surface (the muscle being left exposed for some distance, and its movements being seen at the bottom of the cavity), and the gradual filling up of the depth with granulations; while at the same time the appetite returned, and the capillary circulation, with the entire nervous system, began to regain tone. Small doses of iodide of potassium were now ordered three times a day, and a nutritious but moderate diet with porter; cod-liver oil was rubbed into the chest twice a day, and tepid daily sponging of the whole body was enjoined. In five weeks he was able to walk about, and in seven weeks entire healing of the large and deep excavation resulting from the ulceration had taken place, permitting him with his increase in strength to walk without difficulty many miles. He now left town, taking with him a supply of condensed oxygen, with a strict direction to continue his moderate inhalations, the iodide of potassium, and the cod-liver oil externally, and to communicate with me by letter once a week. Three weeks afterwards, having walked rather too much, and having otherwise irritated and injured the place on the *other* leg, where the small point of ulceration had apparently healed under the influence of oxygen *without sloughing*, he thought it advisable to return to London. I found an ulcer of moderate size, much inflamed from irritation, rubbing of his trousers against it, and neglect; moreover, he had caught a severe cold, and his cough (which had never left him), with profuse perspirations at night, caused much disturbance. He was feeble and *extremely* sensitive to cold, although the weather was warm. I gave him stringent directions as to quiet for his leg, largely increased his quantity of oxygen at each inhalation night and morning, continued his other constitutional treatment as above mentioned for the specific diseases, and watched him closely by two long daily visits. He again progressed most satisfactorily, and was soon enjoying his favourite pedestrian exercise.

Steadily continuing his treatment, he towards the middle of September had entirely lost his consumptive cough and nocturnal perspirations, had fully regained his nervous tone, and had recovered his flesh; he suffered no longer from cold and languid circulation; the dirty congested appearance beneath the cuticle had quite disappeared; the jaw (from which there had been some exfoliation) seemed quite sound, and the general cerebral irritation with iritis had for some weeks ceased to evidence itself, the effused lymph having undergone complete absorption, and the membranes and chambers of the eye being quite clear and free in their movements.

About the end of October, this gentleman—an ardent disciple of Nimrod—wrote for permission to follow the hounds again. With a caution, I acceded to his request; and I have since learned that he rode very hard during the hunting season without any return whatever of his former protracted disease. A few days ago, I may add, I heard some further account of him, and he is now stouter and stronger, and altogether in more robust health, than (he thinks) he ever recollects.

It is especially worthy of remark, with this interesting case in retrospect, that there exists probably no remedy at all comparable with oxygen (in common parlance) as a "purifier of the blood," when judiciously administered. My own experience particularly points to its well-marked and energetic action upon the general capillary circulation and upon the skin; in most cases, it powerfully promotes the healthy secretions of the latter, and it enables it to throw off an immense amount of morbid and poisonous matters; and, unlike all other medicines, while performing this duty, it produces no weakening or other untoward effect, but, on the contrary, simultaneously acts as a general tonic to the entire constitution. It will be observed that I ordered, as an *essential* adjunct to treatment, tepid sponging of the whole body daily, the poisonous *debris* cast off with the aid of the gas, and accu-

mulating on the skin, obviously necessitating either such sponging or the use of the tepid bath. It also merits a passing notice how quickly the heroic doses of the gas, temporarily and carefully given, demonstrated the power of this therapeutic in cutting short and arresting the progress of rapidly-spreading ulceration.

I will give a second case, very briefly, from memory, so as not to lengthen my present paper too much.

A. B——, a policeman, aged thirty-six, had been nearly three months under skilful medical treatment on account of inveterate boils and carbuncles, which, appearing in continuously successive crops, resisted every remedy. At length he was advised that medicine could do no more for him, and that he must get immediately into the country, for the purpose of trying what that change could effect. He was at this time covered with from twenty to thirty specimens of this very painful eruptive disease, and his health was necessarily much undermined from acute suffering and constitutional irritation. Being accidentally met with, he was offered gratuitous treatment under oxygen. Having a family to provide for, he could ill afford to leave them, and therefore thankfully accepted the proffer. He at once commenced a daily inhalation, and so rapid was his progress that in from ten days to a fortnight all the eruptions had entirely disappeared, and the unhealthy constitutional condition was so completely overcome as to render the cure permanent.—*Lancet, Aug.* 1, 1857, *p.* 112.

138.—*Valerianate of Ammonia in Neuralgia.*—For some time back, Dr. O'Connor has been prescribing with success, the valerianate of ammonia in cases of neuralgia under his care at the Royal Free Hospital. It has also been given in a few cases of epileptoid disease. In one case of paralysis of the facial nerve which did well, there was considerable pain along its course, sometimes of a very excruciating character. The valerianate of ammonia was administered with benefit, and in a very short time the patient got well. This remedy has been freely used in the Parisian hospitals, but especially at the Salpêtrière and the Bicêtre; and Dr. Tuffnell, Professor of Military Surgery in Dublin, has also tried it, and found it eminently successful. [An article on this subject will be found at p. 31 of our last volume.—Ed.]—*Lancet, Aug.* 1, 1857, *p.* 117.

139.—ON THE PRACTICE OF "ECRASEMENT LINEAIRE."

By B. J. O'Doherty.

[The author has repeatedly employed the écraseur in the removal of tumours in the anal region, especially hemorrhoidal, and does away with the difficulty previously experienced in the treatment of these cases.]

Before employing the écraseur in the removal of hemorrhoids, M. Chassaignac impresses the necessity of having the patient completely under the influence of chloroform. Indeed he admits that without this the successful performance of the operation would be impossible. No human being, however courageous, could endure the pain attending it without more or less writhing and contortion, which would be fatal to the success of the operation.

Having accomplished this essential preliminary, he proceeds in the following manner:—Gently turning the patient upon his left side, and flexing the right leg upon the thigh, and the thigh on the pelvis, he brings the parts fully within his command. He first passes into the rectum his "Ersgne," having the hooks sheathed; introducing it sufficiently deep to be certain of grappling the entire tumour, he unsheathes it and draws it forcibly out, of course carrying with it the hemorrhoidal mass. He then includes the entire within a firm twine ligature, and round the track of this latter he places the chain of the écraseur, which he proceeds to shorten until it constricts the tumour. At this period he desires an assistant to note the time, and to make a sign to him as every fifteen seconds elapse—on every such sign he tightens the chain until the click is heard. As a general

rule, the tumour will be separated in a space of time varying from ten to twenty minutes, leaving an almost bloodless surface, on which the track of the wound will be scarcely discernible. The after-treatment consists in graduated pressure retained firmly against the anal opening by means of the usual perineal bandage; the patient is removed quietly to bed. Of course precautions are taken before operating to have the bowels cleared, and in such a condition that a motion will not take place for seventy-two hours after. M. Chassaignac considers it of much importance to secure this, and with that view gives strict injunctions respecting the patient's dietary, confining him to food of the simplest kind, and especially interdicting vegetables, or anything calculated to generate intestinal gases, &c.

In one of his earlier operations he found, from not having adopted proper precautions, that the wounded surface of the intestines became partially adherent in the process of healing, thereby most disagreeably complicating the operation by a partial stricture of the rectum. This accident he now always prevents by the following method, which I quote from the appendix to this memoir:—

"On the day following the operation I introduce a catheter into the intestine with much gentleness. I renew this manœuvre the two following days, after which I daily introduce an elastic bougie, each of larger calibre than the preceding one, taking care to have them well greased before introducing them."

The wound will heal by granulation, and M. Chassaignac affirms, and certainly, as far as I could judge, with perfect truth, that the amount of suppurative inflammation will be comparatively very slight. In favourable cases it will be healed in a fortnight.

Rectal, Uterine, and Nasal Polypi.—The employment of the écraseur in these forms of tumour needs no remarks from me, as it is evident how admirably it is adapted to the operation of removing them. I shall, therefore, simply state that in numerous cases of one or other of them, in which I saw it used, the result was everything which the surgeon could desire.

Anal Fistula.—Next to the class of hemorrhoidal tumours, I should be inclined to place this affection as "fit and proper" for this instrument. In the operation for fistula it in truth fulfils every indication that could be wished. In all the cases in which I saw M. Chassaignac use it, the section of the parts was effected without any hemorrhage whatever, and the wound inflicted by it was precisely of that description most desirable in these cases; the amount of contusion of the parts necessarily caused preventing the possibility of the wound healing in any other way than from the bottom; and the comparatively small amount of suppuration, which M. Chassaignac claims as one of the results most characteristic of the action of the écraseur, will be found of no slight importance in the cases of debilitated, and broken-down patients ordinarily afflicted with this complaint.—*Dublin Quarterly Journal, August*, 1857, *p.* 126.

140.—*On the Ecraseur.*—Although still employed occasionally by some surgeons, the écraseur appears to be rapidly falling into disuse in London. Though by no means warm admirers of the instrument, we almost fear that it is being discarded somewhat prematurely, the trial given having not been quite a fair one. From Paris we still hear reports of its very extensive employment, and of its being deemed one of the most valuable of modern improvements. That its use there has been too indiscriminate, and that its recommendation for some really absurd purposes has tended much to damage its English reputation, there can be no doubt. Still, however, we have the fact fairly proved, that without risking either sloughing of the wound, tetanus, or other ill consequence in a greater degree than when the knife is used, tumours, &c., of great vascularity may be removed without hemorrhage. That there are cases in which the effecting of this is of the greatest importance, no surgeon will doubt. In a certain number of selected instances, therefore, the écraseur may fairly be expected to enable us to remove tumours, &c., which otherwise it would be imprudent to meddle with. It may be interesting to observe that in Paris many surgeons have discarded the chain altogether, and employ only a cord. The latter is believed to cut with less contusion than the chain. It should be a soft cord of strong hemp, and not nearly so tightly

twisted as whipcord. An instrument with a screw is also very preferable to one with a lever handle. Strong wire has been used with advantage in America.—*Med. Times and Gazette, July* 25, 1857, *p.* 89.

141.—*Various Formulæ for the Gelatinization of Cod-liver Oil.—M. Stanislas Martin's Jelly modified.*—Take of cod-liver oil, two ounces; fresh spermaceti, two and a half drachms; simple or other suitable syrup, and Jamaica rum, of each six drachms. Beat the ingredients together with the aid of heat, and when the mixture has acquired some consistence, pour it into a wide-mouthed bottle. *Cod-liver Oil solidified with gelatine.*—Take of pure gelatine, half an ounce; water, simple syrup, of each four ounces; cod-liver oil, eight ounces; aromatic essence, as much as may be sufficient. Dissolve the gelatine in the boiling water, and add successively the syrup, the oil, and the aromatic essence; place the vessel containing the entire in a bath of cold water; whip the jelly for five minutes at most, and then pour it, while still fluid, into a wide-mouthed glass bottle, furnished with a cork, or with a pewter cap, or if a bottle be not at hand, into a porcelain or earthenware pot, which should be carefully closed. *Cod-liver Oil gelatinized with Carrageen or Irish Moss.*—Take of fucus crispus half an ounce*; water, eighteen ounces; simple syrup, eight ounces; cod-liver oil, eight ounces; any aromatic, according to taste. Boil the carrageen in the water for twenty minutes; pass the decoction through flannel; concentrate it until it is reduced to four ounces by weight; add the syrup, the oil, and the aromatic; whip the mixture briskly, having first placed it in a cold bath, and pour it, while still a little warm, into the vessel intended to receive it. The syrup may be replaced by an equal quantity of Garus' elixir, mint or vanilla cream or rum, &c.

M. Sauvan proposes to combine cod-liver oil with Iceland moss. *Lichen and cod-liver oil.*—Take of Iceland moss jelly, four ounces; gelatine, four scruples*; hydrocyanated cod-liver oil (to which two drops of essence of bitter almonds have been added), six drachms. Prepare the Iceland moss jelly in the usual manner; melt the gelatine and pass it into the vessel which is to hold it; then add the cod-liver oil; stir the entire with a spatula, until the mixture be homogeneous and the jelly begins to congeal. Dose—two or three spoonfuls daily.—*Bull. Gen. de Thérap.—Dublin Hospital Gazette, Aug.* 15, 1857, *p.* 254.

142.—*Masking the Taste of Cod-liver Oil.*—M. Leperdriel recommends the addition of 10 per cent. of common salt as the best means of masking the taste, not only of cod-liver oil, but various other kinds of fish oil. The salt may not only conceal the taste of, but add to the digestibility of the oil. Essence of aniseed further masks the oil, but for most persons the salt suffices.—*Med. Times and Gazette, June* 20, 1857, *p.* 624.

143.—ON THE ELECTRIC CAUTERY AND ITS APPLICATION TO DENTAL SURGERY.

By Thomas H. Harding, Esq.

[Mr. Marshall's paper in the 'Lancet' in May, 1851 (Retrospect, Vol. xxiii.) first suggested to the author, that the electric cautery might be employed for effectually destroying the sensitive pulp of a decayed tooth in a more certain, rapid, and safe manner than had been previously been known.]

In the first volume of the 'Lancet' for 1851 there appeared a short communication from me on the destruction of the dental pulp by the heat of electricity, wherein I confidently stated that it might be regarded as a great advantage by all engaged in the practice of dental surgery. I had employed it for some months previous to the appearance of that paper, and fairly and justly claim to have been the first to use it in dental surgery in this country. In the same number of that

journal was described an instrument for applying electric heat in dental operations, by Mr. Waite; but I had used it before the time mentioned by Mr. Waite, and moreover was not acquainted with his invention.

Now, other methods have been employed for applying heat to destroy the nerve of an aching tooth. The old village doctress has long been famous for curing toothache by the thrust of a hot needle or pin into the tooth, and dentists have occasionally used a heated wire. The actual cautery has long been a practice in vogue for the purpose of destroying the sensibility of the tooth-pulp from caries, and has been generally performed by heating a long piece of steel, small at one end, but terminating in a bulbous head about the size of a small pea, which is inserted into a handle. From the bulbous extremity projects a piece of platina wire, smaller or larger according to circumstances; the bulbous end being heated in an ordinary lamp until a red or white heat is obtained, communicates the heat to the platinum wire, which is then immediately used for the purposes required. Another method of applying hot wires to the teeth is by means of platinum sponge and hydrogen gas, known as Œropile; but I have no experience in the use of this.

In regard to the use of the actual cautery, let us see what Mr. Snell says of it in his book on the teeth: he says, "Even now, it (the destruction by the actual cautery) is frequently performed in an improper manner, which will account for the want of success which often attends it when attempted by ignorant men. As the operation is very generally performed, it would be more properly styled carbonizing the cavity of the tooth generally, than simply cauterizing the membrane." It must be obvious to every one that the great cause of failure, such as is here described, depends upon the difficulty experienced in obtaining a sufficient and permanent amount of heat; for it is well known that wire alone, which is the only substance sufficiently minute to be applied within the interior of a tooth, can retain the heat but for a very limited time. It is therefore necessary, in the hands of some dental surgeons, who are not satisfied with its effects, to apply it to the tooth certainly more than once, perhaps several times in succession. This must prove of very serious injury to the teeth, as it will carbonize a large surface of the tooth generally, instead of cauterizing or destroying the tooth-pulp solely. Now all this is completely removed by the use of the electric cautery, which can never be surpassed for convenience and ready mode of application, besides possessing a steady, uniform, and constant degree of heat, which can be continued at pleasure until the proper effects are obtained, and then as magically discontinued by destroying the connexion between the positive and negative wires. It has the advantage also, over every other known method of cauterizing, that it can be introduced into the patient's mouth, and actually placed within the cavity of the tooth, before it is made to become incandescent,—an advantage that cannot be over-estimated by those conscientious dental surgeons who are so frequently called upon to destroy a tooth-pulp.

The *nature of the apparatus* which I am in the habit of using may be thus described. I shall speak of the battery first, and the cauterizer after:—

The *Battery* is a compound of one of Smee's, and consists of six pairs of plates of zinc and platinized silver, contained in six cells, which are set in action by one fluid—viz. dilute sulphuric acid. The battery may of course vary according to the choice and taste of the operator, but it is desirable to render it as elegant and as simple in arrangement as possible. When I first employed the electric cautery, I used a battery of two pairs of plates in a single cell. I now prefer the larger battery of six cells, because a large battery with weak acid will last longer than a small one with strong acid; besides this, the action of the battery is more uniform, and lasts much longer. A Smee's battery is the most convenient of application; it is always clean, ready when wanted, and has the advantage moreover of cheapness. Grove's and Maynooth's batteries are not fitted for the purpose required, as they are troublesome, and often give out fumes of nitrous acid, which are decidedly objectionable.

The *Cauterizer* is thus constituted:—The terminal six inches of the poles, which are of copper wire plated, are supported on an ebony or ivory handle, *upon* the side of which one of the poles is interrupted at a particular point. The *extremities of* the poles are connected by a piece of platinum wire, a hun-

dredth of an inch thick, and three-quarters of an inch long, which is bent into a loop. The sides of the loop are then brought parallel and nearly close to each other, without touching, and it is thus introduced into the pulp cavity of the tooth to be operated on. By a slight pressure on one side of the handle, the interrupted pole is temporarily joined, and the platinum wire immediately becomes brilliantly heated, as it lies in contact with the tooth-pulp. Sometimes, however, I have found it desirable, in the first place, to complete the galvanic current, and thus heat the platinum wire, before bringing it to bear upon the exposed pulp. The flexibility of the loop of wire enables the operator to bend it in any direction previously to use. In this way I have succeeded in rapidly destroying the pulps of decayed and condemned teeth, and have proceeded, sometimes after a few minutes, to the operation of filling with gold, or with other suitable stoppings, as Ash's metallic paste. I use several cauterizers with extremely thin wires, made expressly for myself by Maddox, of University-street.

Of the Operation in general.—The affected tooth being carefully examined, its cavity is to be well-dried out and cleaned; a soft napkin is then introduced, to protect the mouth from the possibility of contact with the instrument, the platinum point of which is passed into the cavity of the tooth, is then heated, and, from its brilliancy, gives a clear and distinct light, and the tooth-pulp is lightly touched with the heated wire, and the whole or particular portion of it required is destroyed. If the operator prefer it, he may have the wire heated before introduction into the mouth, but my own practice is generally to apply the wire before doing this, and then permitting of incandescence to take place in the mouth, which gives a light which is not seen by the patient, and so well illuminates the interior of the tooth, as to permit the tooth-pulp or diseased membrane to be seen very distinctly and clearly.

There is some caution to be observed in the use of this agent, which it will be as well to mention, and that is, to avoid burning or otherwise injuring the solid part of the tooth; particular attention and care should be paid to this point. This will not happen unless the application is prolonged, which will very rarely indeed be required, if special care be observed to have the wire at a white heat. This is the more necessary, to produce speedy destruction of the part to be touched, which is effected almost instantly. In one instance under my care, that of a lady for whom I nipped off the crown of an incisor tooth, for the purpose of fixing some artificial teeth, and so exposed the pulp of that tooth, I applied the electric cautery at barely a red heat, owing to feebleness of the acid; the consequence of this was, that the dental pulp became attached to the end of the wire, and was actually drawn out entirely. This has been preserved. It gave some slight pain for the moment, but nothing in comparison to the pointed steel or silver wire used by most dentists. This perhaps unimportant accident, I think, would not have occurred had the cautery been at a white heat, as it would then have completely carbonized or destroyed the part with which it came into contact.

The *effect* of the operation is the rapid destruction of the pulp of the decayed and condemned tooth; not the whole of the pulp, for that is not always necessary, but that portion of it especially which is exposed. If this is done with a light, steady hand, no subsequent inflammation is produced upon the substance of the tooth, or in the cavity. If there should be any marked sensitiveness in the tooth, independent of the pulp, the slightest application of the cautery to it will prove effectual in completely removing it. In the large number of cases in which I have employed the electric cautery I have never known any bad effects produced on the tooth, and this I attribute to the care with which it has been applied. I am, however, quite prepared to believe that a want of attention in this respect would not only prove injurious to the tooth, but even in many instances cause its destruction. It would be only under such circumstances that the operation could be attended with or followed by severe pain.

In whatever condition the tooth-pulp may be, the operation is associated with a little pain. But as the time of its application is not unfrequently just a second or so, in the large majority of instances in which I have employed it, there has been no pain whatever felt. There may be a sort of twinge, which is but momentary; and whatever pain may arise is not to be compared to that arising

from the process of extracting a tooth, which, as is well known, is by no means free from a very considerable amount of pain. Some of my patients have felt so little when it has been applied, that they have asked me to apply it a second time to make all certain that the dental pulp has been effectually destroyed.

The *subsequent filling of the tooth* is a matter which demands attention after the pulp is destroyed. If the cavity is examined very minutely, a small black speck or spot can be seen after the cautery has been used; this is due to the carbonization of the pulp, and is a guide, to some extent, in the after process of removal of the carious portion of the tooth, which should always be done after the sensibility has been destroyed by the electric cautery, and is to be accomplished with care in the usual manner, taking the precaution to leave none of the tooth in that condition remaining; every particle of it should be removed. For a few days afterwards, sometimes only one, but generally two, the cavity is allowed to remain filled with a combination of morphine and mastich, and then the tooth is stopped. Sometimes, again, I request my patients to allow a few days to elapse before I stop their teeth, the cavities being in the meantime filled with a solution of mastich and camphor. But I occasionally accomplish what I believe no other dentist has done, and that is, to plug, or stop the cavity in the same sitting during which the pulp has been destroyed. This, however, depends upon the complete absence of pain after the use of the cautery. I have already stated that there is always a little pain, but sometimes this at once disappears, and I then do not hesitate to stop the teeth permanently. I also do this if there has been a little bleeding from the cavity previous to cauterization, stopping the tooth immediately. It might be supposed this procedure of stopping the teeth immediately after the destruction of the pulp would be always followed by dull, aching pain; but I am happy to say that not the slightest indication of pain has, in the great majority of instances, ensued, in rather an extensive use of this powerful agent.

As a rule, however, the tooth should not be stopped on the same day as the electric cautery has been employed, unless in the exceptional instances just mentioned—the removal of the carious portion not being followed by sensibility. Experience and practice teach us to know the proper cases which can be plugged immediately.

By waiting a day or two, I have found by experience also, that any sensibility remaining after the destruction of the dental pulp, and removal of the carious parts of the affected tooth, is sure to disappear, assisted by the solution of morphine and mastich, or mastich and camphor, which occupies the cavity. By this time the cavity will bear the pressure of an instrument within it, and an examination will show that the destroyed pulp has receded considerably inwards; this is apparent by noticing the black discoloration from the previous carbonization of the affected part, and as it is deeply situated, it is either out of the way of being pressed upon by the stopping of the tooth, or becomes a matter of the smallest possible importance, so far as my experience permits me to judge in this respect. I must, however, warn others not to mistake the black speck here referred to for actual caries.

Under the various circumstances which have been mentioned, the *results* of the operation are completely successful, and the teeth are serviceable for years. If, however, a tooth should remain tender after the use of the cautery, it is always better to wait for its complete disappearance before proceeding to stopping. I cannot call to mind any single instance in which the pain was at all persistent after its use, but it will be sure to become so if the tooth is one not fairly suitable for preservation, from being either loose or diseased at the termination of a fang, such as a small fungous growth, or some similar cause. In such cases, the destruction of the tooth-pulp, accomplished no matter by what method, will prove unavailing and unsatisfactory, ultimate extraction in such instances proving the only resource. Should there be associated inflammation of the gums with a carious tooth, in which the pulp has been destroyed in the manner which has been recommended, then the usual means for combating it must be resorted to, such as a leech or two to the gum, and repeated fomentations with warm water alone, as I am in the habit of recommending, or with warm milk-and-water, or a poultice. For the pain in the tooth itself, morphine and mastich will be found quite sufficient.

Some patients express the receipt of immediate relief after the use of the cautery, others, again, not for an hour or two, but eventually they are quite relieved; the pain, however, is, I repeat, extremely slight.

In the large number of instances in which I have used the electric cautery to destroy the sensitive tooth-pulp, I have not known an *accident*, in the true sense of the word, to happen, unless I should except the case in which the dental pulp was suddenly drawn out attached to the platinum wire, which I have preserved for illustration, and depending upon, as has been said, the wire being at a red instead of a white heat. Such a circumstance might occur again in the hands of others. To avoid injury or accidents to the teeth or gums, it is necessary to keep the hand quiet, firm, and steady; the heated wires, if suddenly dislodged, would assuredly burn the cheek or gums, the tongue or palate, especially if steadiness was not particularly observed on the part of the patient. It was, I may say, only the other day that an accident of this kind happened to a lady, in whose tooth I was applying the cautery; she suddenly turned her head, from some cause, when the heated wire touched the internal surface of the cheek. It may be observed, however, that so rapidly can the disconnexion of the wires be accomplished by removal of the finger from the handle of the instrument which is held in the hand, that an accident can really very seldom occur from the heated wire.—*Lancet, July* 18 *and* 25, 1857, *pp.* 54, 81.

144.—ON THE TREATMENT OF EXPOSED AND DISEASED DENTAL PULP.

No. II. of the 'Quarterly Journal of Dental Science,' which is worthy of the body of gentlemen whose organ it is, deserves our attention. There is a good paper by Mr. Underwood on the *Treatment of the exposed and diseased Dental Pulp*, which is more interesting to mechanical dentists than to medical men. The following passages, however, may be borne in mind:

"The parts of the teeth possessing nervous sensibility are the pulp, or, as it is more generally termed, the nerve, the periosteum, and the fine membrane, situated between the enamel and the bone. Mr. Tomes considers the sensibility of this part of the tooth to be owing to the fibrils in the dentinal tubes; he says, the greater degree of sensitiveness observable in the dentine immediately below the enamel, that is at the point of ultimate distribution of the dentinal tubes, and consequently of the fibrils, may be fully accounted for, on the supposition that the latter are organs of sensation.

"No doubt the nervous filaments passing through the tubuli or else through the inter-cellular substance (for grave doubts have been thrown on the tubular structure of the tooth), form a plexus under the enamel which is highly sensitive; every practitioner knows that in excavating some teeth, there is no pain whatever felt on introducing the instrument, even into the pulp cavity itself; but a sharp pang is experienced immediately we touch the spot where the dentine and enamel come in contact; the sensibility, however, of this membrane need not interfere with plugging the tooth: no ill effects will follow it. That which is toothache, in the general acceptation of the word, proceeds from actual exposure of the dental pulp, and is characterized by acute and violent pain; a portion of food, or any foreign substance, entering the cavity, and coming in contact with the pulp, anything very hot or cold—in fact, exceeding in either of these respects the natural temperature of the mouth—immediately produces a paroxysm of pain along the whole course of the dental nerve extending up the head, fever, and general constitutional derangement.

"There are three modes of treatment open to us in these cases. Should the affected tooth be one of the incisors, or canines, the pulp may be removed either by a five-sided broach, or by pushing a straightened fish-hook up the cavity; give it a half turn, and withdraw it quickly, and in nine cases out of ten you will bring the nerve with it. The bleeding may be stopped by the application of camphorated spirit; after which remove all the carious bone, dry out the cavity, and plug at once. The second plan is to destroy the nerve entirely: the third, to render its exposed surface insensible. There are several escharotics useful for this purpose."

Mr. Underwood then describes the various escharotics. We omit his observations on the arsenical, and give the following:

"Tannic acid, or tannin, a vegetable acid, obtained chiefly from nutgalls, has a strong affinity for albumen and gelatine, and its *modus operandi*, when applied to an exposed pulp, is, that it instantly unites with the albumen, and converts the surface of the pulp into a kind of leather covering, or cap, which protects the under surface from further injury or contact with any foreign substance. Upon this we may proceed to stop a tooth; the pulp in this case is not destroyed, but retains its vitality; the tooth is not a dead substance in the mouth, and consequently not so liable to periosteal inflammation; its normal functions are still carried on; when the nerve is not exposed, but where we find excessive sensibility of the dentine, tannin will be found a very valuable agent, as it at once coats the walls of the cavity with an insoluble compound, and destroys their sensitiveness. Some use it in a state of powder, but I prefer a solution in water or spirit—the spirit solution is perhaps the better.

"Chloride of zinc has been very largely used as an escharotic. It is soluble is chloroform, spirits of wine, ether, and water. In solution it is more prompt in its action, and also less painful; as with tannin it has a strong affinity for the albumen of the tooth, and when in contact with the dentine it is decomposed, and gives off chlorine, and thus acts as an antiseptic. In using this escharotic the tooth should be plugged two or three days after its application; if we wait longer we are likely to find the sensibility of the tooth again excited.

"Creosote forms a coating on the surface of the pulp, and restores its healthy action. It may be dissolved in alcohol or ether; but its effects are not so satisfactory as with some of the other agents mentioned; its antiseptic properties are very marked, and render it a useful aid to us where there is a secretion of pus. In such a case, by keeping the cavity dressed for a time with it, we may often plug a tooth which would otherwise have been lost.

"The nitrate of silver is also superficial in its action; the strength at which it should be used is a grain, or a grain and a half, to a drachm of distilled water; some dentists use the nitrate in its solid state, but I prefer the solution; it is more convenient for application. The cavity should be carefully dried out before introducing the dossil of wool, and the dressing should be renewed three or four times a-day. Your patient, if tolerably neat-handed, may do this himself; but you should impress on him the necessity of drying the cavity perfectly before introducing the nitrate. The formula given will be found very satisfactory; it is one of the safest remedies we can use for the purpose.

"Four or five grains of recently-burnt quick-lime, mixed with a grain of morphia, is a very certain escharotic. A little of the powder should be taken up on a piece of wool, and placed on the pulp, and the cavity closed with wax; this should be removed the next day; and if any tenderness remain, apply it again; if not, apply the alcoholic dressing for a few days, and then plug the tooth. The dressing which for the last few years I have most generally used, and on which I place most reliance, is a strong saturated solution of camphor, the strength a drachm and a half of camphor to two drachms of spirit. The anodyne effect of the camphor is very marked, and though the remedy is longer in effecting its work than some of the others, it is decidedly safer. The patient should be ordered to change the wool three or four times a day. At first a complaint will probably be made against the taste of the camphor, but this will soon pass away. On an average, after two or three weeks, the tooth will bear excavating, and the exposed part of the pulp be insensible, and we can plug the tooth. By using this agent there will be no ill effects, the vitality of the tooth will still remain, its condition be healthy, and we shall have a permanently-useful, instead of a dead organ in the mouth.

"The actual cautery may often be used with great success in instantly producing an eschar, and in a few days the tooth may be plugged. The battery invented by Mr. Harding, Member of the College, and manufactured by Mr. Coxeter, for this purpose, is very convenient; you apply the wire to the pulp, unheated; by touching a spring contact is made, and it is instantly at a white heat: care should be taken not to wound the internal part of the pulp. You will find this in many cases preferable to some of the more powerful escharotics: for myself, however, I infinitely prefer the nitrate of silver diluted, or the solution of camphor. We

more frequently meet with ossification of the pulp from the application of the actual cautery than from any other escharotic; this process of ossification goes on after the tooth is plugged, and, where it is confined to the portion of the pulp in contact with the gold, helps to render the operation more successful. In conclusion, allow me to say that I have only drawn your attention to those local remedies which I have been in the habit of using, and of whose action I could speak with certainty; the constitutional treatment would have caused me to trespass too long on your time."—*Medical Circular, July* 22, 1857, *p.* 39.

145.—ON THE IMPORTANCE OF THE PULSE IN RELATION TO CHLOROFORM.

By Dr. Robert Dyce, Aberdeen.

I read constantly, that in giving chloroform you must put only a certain quantity upon the handkerchief, or whatever else is employed; that it is only safe to give it with this and that peculiar apparatus; that you are to watch the breathing, says one, the flickering of the eye and state of the tongue, says another; while a third raises the arm and lets it drop, as the only indication that a sufficient and safe amount of anæsthesia is produced. Now, I neither do the one nor the other of these things. I care not how much chloroform is poured upon the medium for its exhibition. I use no peculiar apparatus. I am indifferent as to the breathing, the eyes, the tongue, or any of these things. To one thing only do I attend, and that is the pulse—the state of the circulation: but from the moment my patient begins to inhale, from that moment I keep my finger steadily upon the pulse, and by its rapidity, its regularity, and sometimes its volume, is the future quantity regulated. I know well that there are men of eminence in the profession who ridicule and sneer at such a procedure, but I defy them to point out a case of death where the pulse has been made the guide. Indeed, so satisfied am I from very extensive appearance, that this is the only sure and unerring criterion of the extent of its influence upon the system, that I fearlessly give it to every class of patient, and at every period of life, from the earliest infancy to extreme old age. Your readers must, however, understand, that it is not by merely now and then, at uncertain intervals, taking hold of the arm and feeling the pulse, that reliance on it is to be placed—the finger must never be off it when inhalation is going on, and by this means, even blindfolded, the very earliest indication of danger is communicated.

There is a fatal case recorded as occurring in the Middlesex Hospital in July, 1854, where it is stated, "The pulse, which had risen to 120, descended to 70, having a full, steady, and deliberate beat;" again, "that at the end of ten minutes violent spasms were induced. These continued about three minutes, and then somewhat subsided." It then goes on to say that the pulse gave a few rapid and irregular beats, and then ceased, the face becoming pale and death-like; the inhaler was then removed instantaneously. On reading this case at the time of its publication, and on again perusing it, the same impression remains upon my mind, that to two circumstances may be attributed the unfortunate result:—1. As it is not specially stated to be otherwise, it is to be presumed that the inhalation was continued during the time of the "violent spasms," so as to get the patient as quickly over this state as possible—a plan which many recommend, and one, although I had misgivings, I once pursued myself. This I now consider extremely hazardous, because very seldom can the pulse be felt during this muscular rigidity, and because it is quite possible that the muscular walls of the heart may partake of the same state as the rest of the body. Be this as it may, if spasm or rigidity of the muscles prevents the pulse being distinctly felt, the inhalation must be instantly stopped until the spasms subside.

2. The pulse in this case is stated to have descended from "120 to 70." On reading this, one is led to conclude that a sudden dropping of the pulse to the lowest figure had taken place. Now this, in my experience, rarely happens; the time for the change is always appreciable and sufficiently well marked, if the pulse is steadily watched. There are, no doubt, differences in this respect in some

cases, though rarely, as there are in the facility with which one patient inhales it over another; and this very circumstance is a strong argument in favour of a continuous watching of the pulse. I have known one more full inhalation at this stage, when the pulse has begun to fall, sink it suddenly so low, that had another been allowed the heart would have ceased to beat. Generally, however, the pulse does not sink suddenly, but gradually—hence it always gives warning; but no change, whether rapid or slow, must be disregarded. My plan is, therefore, never to persevere when rigidity comes on, and to stop, in like manner, when the pulse begins to fall, or else to give it very cautiously, and this cannot be done unless the finger is constantly on the pulse. So much for the velocity of the pulse—the chief point of attention. There are, however, two other qualities of the pulse which deserve attention—one is a state absolutely debarring its continuance; the other state is comparatively of little value.

The first of these states, that of danger, is where the pulse becomes irregular or intermitting. This is not a common occurrence, nor does it seem to be dependent upon manifest disease of the heart, as far as I have observed; yet I have always desisted whenever this state of the pulse has come on, fearing some untoward result. One case I well recollect was upon the operating table, and was being put under chloroform: on three several times, just as unconsciousness was manifesting itself, the pulse became at once intermitting, and fell down perceptibly in quickness, without the slightest change in the breathing or rigidity of the muscles. In a few seconds the irregularity had ceased, and the inhalation, which had been stopped, was resumed. Again the pulse intermitted. A third time the same effect was produced on resuming the inhalation. In another case, that of a very stout female, a monthly nurse, who was about to have a fatty tumour removed from the shoulder, this irregularity in the pulse, twice in succession, showed itself on approaching unconsciousness, and latterly with excessive congestion of the face, but without spasm. I declined to continue it, and the patients were operated upon without it. This peculiarity in my experience is very rare; for I cannot recollect, out of many hundred cases, above five or six where it came on. Three of the subjects were very fat persons. May not the same state of the heart have led to this peculiarity?

The other state of the pulse is its volume. This I consider of little or no value as a guide, although, in every case, this is one of the first, if not the very first indication of commencing anæsthesia, the pulse becoming full and almost bounding. If the patient is in previous health it is also quickened; as the effects become more manifest the fulness subsides to its ordinary state, and remains, with very little alteration as to strength, throughout the period of unconsciousness. Continue the inhalation, and its velocity or rapidity is altered; but, unless the pulse falls very much in quickness, its volume is seldom much affected. No reliance is, therefore, to be placed on this state; it gives no warning of the nearness of the danger, for I have seen it full, at least not weak, when its velocity was but 60. The only occasion where volume, or, in other words, its strength or weakness, is of moment is, when a patient loses, or is likely to lose, much blood during a surgical operation; then double caution is necessary in administering chloroform. Hemorrhage weakens the strength, but increases the velocity of the pulse. Chloroform alone lessens the velocity; but, unless in excess, seldom alters the strength or volume of the pulse. Faintness, or complete syncope, may be only the effect of the hemorrhage; but, when faintness is present, even with imperfect unconsciousness from chloroform, it is always alarming, as the means at our command for rousing and stimulating the patient are limited to external means. Hence, I repeat, great watchfulness is requisite in continuing chloroform when hemorrhage is going on; and here the pulse is the sole and unerring guide.

With regard to the mode of administration I have nothing new to announce; there are, however, a few points to which I always attend, and which I may be excused mentioning, as I believe them to be of importance.

1. I use a clean, white, thin, or cambric pocket-handkerchief, folded from the corners inwards, as recommended by Professor Simpson, as being most easily managed.

2. I never measure the quantity poured upon the handkerchief, but thoroughly wet the centre (which is made slightly hollow), perhaps to a space the size of the

palm of the hand. This must be renewed every few seconds, as it rapidly evaporates.

3. I never force the breathing of it pure at first, and always avoid coughing; hence the handkerchief is so held that a portion of atmospheric air is mixed with the chloroform; gradually it is brought nearer so that at last the mouth and nose are covered, and it is then inhaled pure.

4. In all cases I produce complete unconsciousness at first, whether this state is to be kept up to the same extent or not; by this means a single inhalation afterwards, on any movement appearing, readily affects the patient. With half measures at first this is not so easily accomplished.

5. The person giving chloroform should have nothing else to attend to; his attention ought to be entirely confined to its administration and effects. I recollect some years ago assisting an eminent professor of surgery at an operation, where inattention to this rule proved nearly fatal to our patient. But if, as sometimes happens, when perfect and deep anæsthesia is induced, a few minutes pass without its being necessary to inhale, then this rule may be relaxed. I have in such circumstances frequently had to apply the midwifery forceps, and attend to the chloroform at the same time. The safe rule is, however, exclusive attention to the inhalation.

6. I find that much of the dread which patients experience on first taking chloroform preparatory to a surgical operation, is removed by making them inhale it the day previous. Any fear or reluctance they may have had is thus invariably removed, and when upon the operating table they take it much more readily, and hence are much sooner affected.

7. If possible, the stomach should be empty, or the food should have been taken some hours before inhaling it; by this means sickness and vomiting are avoided. The nausea previous to vomiting often depresses the strength of the pulse, and may cause alarm; but as there is seldom perfect unconsciousness, the pulse remains quick, and on the occurrence of vomiting the weakness of the pulse disappears.

In conclusion, I always take care to have a small phial with strong liquor ammonia at hand; the only restorative I have ever had occasion to use.—*Med. Times and Gazette, May* 23, 1857, *p.* 509.

146.—*Ether and Chloroform Gelatinized.*—Professor Rusponi has succeeded in turning ether and chloroform into gelatine, by shaking them with white of egg in a closed receiver. The compound obtained with the ether is semi-transparent; with the chloroform it is white and opaque. This gelatine is soluble in water, and may be spread on linen in the form of a poultice. It will likewise mix with morphine, cantharidine, conicine, &c., and may thus become of great therapeutical use. —*Lancet, Aug.* 8, 1857, *p.* 144.

147.—*On Chlorodyne.* By Dr. Thomas A. Henderson, Physician to the Ramsgate Infirmary.—[Dr. Henderson has been much pleased with the effects of chlorodyne in a case of severe pain in the hip-joint and in the vertebræ of the neck, in a patient long subject to chronic rheumatism.]

He could not tolerate opium, hyoscyamus, or belladonna, and, in despair almost, I gave him a prescription for a mixture of chlorodyne, in water, the dose being twelve minims. He only took two doses, which acted so well that he compared his feelings to being transported to Paradise. The effects lasted for several days. Whenever his pains return he now takes a dose at bed-time, feeling secure of an escape for some days from suffering. I have also applied it locally, with good results, but in too few cases to report much on it. It produces a certain amount of warmth and perspiration, with a remarkably soothing state of mind, as well as arresting the pain. No headache or other unpleasant symptoms followed its administration.—*Medical Times and Gazette, Oct.* 10, 1857, *p.* 382.

148.—*Enema of Borax.*—Arguing from the good effects of the local use of borax in aphthæ of the mouth, M. Bouchut proposes its employment, in the form of enema, in those cases of intestinal catarrh in children in which the mucous membrane becomes ulcerated around the anus. The formula he suggests consists of a drachm of borax to five ounces of a light decoction of pearl barley; this quantity of borax to be progressively increased to a drachm and a half, or a little more.—*Dublin Hospital Gazette, Aug.* 15, 1857, *p.* 253.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE PRECEDING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

DISEASES AFFECTING THE SYSTEM GENERALLY.

AGUE.—The injection of disulphate of quinine diminishes the quantity of uric acid in the urine. In ague there is a considerable increase of uric acid in the urine. It is possible that further observation on this point may throw much light on the nature of this disease. (Dr. Ranke, p. 272.)

CACHEXIA.—In the treatment of that class of cases so frequently seen in children, characterized by large heads, tumid bellies, and pasty complexions, nothing is so efficacious as a simple combination consisting of from five to ten grains of phosphate of lime three times a day, in chalk mixture. Where there is palpable anæmia, some simple chalybeate must be added. (Dr. W. Budd, p. 40.)

CANCER.—The hygienic measures necessary in the treatment of the non-ulcerated tumour are plenty of good wholesome food, a well-drained, well-ventilated house, pure country air, extreme cleanliness of person and clothing, with sufficient exercise and mental occupation and amusement: these will do much towards establishing a more healthy state of the system. Deficient action of the skin, kidneys, and digestive organs must be corrected, and if pain exists it must be relieved by opium or hemlock. A combination of iron and iodine, and the iodide of arsenic have both been exhibited with excellent effect in this disease, but the bromide of potassium given in doses of five or ten grains with cod-liver oil is the most useful, the effects on the tumour being "really remarkable." The local applications which are of value are preparations of lead, iodine, and bromia. A formula much used in the Cancer Hospital is equal parts of liquor plumbi, almond oil, diluted acetic acid, and water. This preparation allays pain, and apparently hastens the absorption of the indurated tissues around the tumour. The use of solutions of iodide of lead or iodide of potassium in glycerine is very beneficial, and the solution of bromide of potassium in glycerine appears to be even more so. Dr. Arnott's freezing process has reduced many large adherent tumours to a small, movable, indolent condition. Mechanical pressure is often very useful in the non-ulcerated tumour. This is best applied by an air-truss as invented by Dr. Neil Arnott, for by this means the support is perfectly uniform over the whole surface of the tumour. The amount of pressure must be regulated by a spring pressing on the back of the truss. When the tumour is ulcerated, Dr. Marsden recommends carrot poultices, to arrest the fetor; but their application is rather painful. Should bleeding take place from the ulcerated surface it is best arrested by a solution of perchloride of iron. Except in cases of very free bleeding it should only be of sp. gr. 15°, as above this it acts as a caustic. To the unhealthy fetid surface left after the separation of a cancerous tumour a lotion of chlorate of potash is the best application. To relieve pain, opium given internally is the most effectual means; or an ointment of lead and a little morphia may be used, if the former means is not thought advisable. The sulphate of zinc is the most safe and effectual mode of destroying malignant growths about the female genital organs. (Mr. T. Spencer Wells, p. 33.)

To obtain a healthy granulating surface to ulcerated cancerous tumours, having attachments to bone or to vital parts (and for this purpose alone is the use of caustics in this disease advisable), manganic acid in combination with potassa as a base is a most invaluable agent. The "manganese cum potassa" caustic is a dark green powder, and may be applied very readily by means of a small pepper-castor. When used to reduce an exuberant growth, it must be applied in a layer as thick as the tissue to be destroyed, and then formed into a paste by dropping a little water upon it, after which some simple dressing may be applied. By means of carrot poultices the eschar drops off in three or four days. It is less powerful than other caustics, and it at once removes all fetor from the ulcer. Crops of warts may also be conveniently removed by its agency. (Mr. W. Cooke, p. 36.)

Dr. Fell's Treatment.—If non-ulcerated, the skin must first be removed by some liquid caustic, as nitric acid. The tumour so exposed must be covered by a layer of chloride of zinc paste spread on linen. The following formula is used:—℞. Sanguinariæ canadensis, ℥ss. vel ℥i.; chlor. zinci, ℥ss. vel ℥ij., aquæ, ℥ii.; pulv. sem. tritic. hibern., q. s. Mix, and form a paste the consistence of treacle. Through the slough so produced incisions are to be made with the knife, and strips of cotton spread with the paste introduced daily, till the whole tumour is seriatim converted into one large eschar, which drops out entire in about 12 or 14 days. To any secondary tumour or enlarged lymphatic gland, the following ointment may be applied:—℞. Sulph. zinci, ʒvi.: sanguinariæ, ℥ij.; myricæ ceriferæ, ℥j.; extr. opii (aquos.), extr. conii, aa ʒvi; ungt. cetacei, ℥vi. Mist. et fiat ungt. With this ointment one containing iodide of lead may be applied alternately every twelve hours. (Dr. Fell, p. 37.)

Gastric Fever of Children.—The following treatment is adopted by Dr. Farre, of King's College Hospital. To a child of a year and a half to four years old give a mixture containing a drachm each of the diluted nitric and hydrochloric acids to six ounces of water, in doses of half an ounce three times daily, with about four grains of grey powder every night at bed-time. If the disease is passing off, omit the powder, and give the acids in infusion of quassia or with bark. (Dr. A. Farre, p. 27.)

Glossal Cancer.—In those distressing cases of glossal cancer, where deep and unhealthy ulcers exist, the best treatment is to apply powdered sulphate of copper by means of a camel-hair brush, about twice a day. Allow it to remain four or five minutes, then let the mouth be washed out with tepid water. A wash of borax may also be used frequently during the day. Under this treatment the ulcers sometimes slowly heal up and cicatrize. (p. 39.)

Rheumatism, *Acute.*—The abstraction of twelve or fifteen ounces of blood is generally indicated in the commencement of this disease—though this should not be repeated on account of the remarkably firm buffy coat which invariably forms. Half an ounce of castor oil should be given, and repeated every other morning. Immediately after the purgative has ceased to operate, the following medicine is to be commenced:—℞. Hydrargyri chloridi, aloes extracti aquosi, aa gr. vj.; pulveris opii, extracti colchici acetosi, antimonii potassio tartrat. aa gr. iij.; confectionis rosæ q. s. M. Divide massam in pilulas duodecim, quarum sumatur una 4ta quaque hora, cum haustu infra prescripto. ℞ Potassæ bicarbonatis ℈j: acidi citrici gr. xv.; liquoris potassæ ♏x.; potassæ nitratis gr. x.; syrupi ʒj.; aquæ puræ ℥iss. M. Fiat haustus. The symptoms will soon be much relieved, and in twelve or fourteen days the febrile symptoms will be subdued. During recovery an alkaline tonic may be given. (Dr. W. S. Oke, p. 27.)

The treatment of acute rheumatism by one or other of the salts of potash has now become the established practice of the leading London physicians. Dr. Barlow has lately been trying the bicarbonate, but does not find it so effectual as the acetate which he had previously been in the habit of using. A combination of the nitrate, bitartrate, and acetate, given well diluted, is a good form of administration. (p. 30.)

If the portal system is congested, as shown by arrest of the biliary and urinary secretions, exhibit a brisk mercurial alterative and purgative, repeating this if necessary during the attack. Then prescribe lemon-juice in the proportion of a teaspoonful or dessertspoonful, according to the age and size of the patient, every second hour. This of itself tends also to keep the bowels free. A little morphia, the dose being carefully regulated, may be given at bed-time. Dr. Sandwith, of the Hull Infirmary, has recently treated ten cases with acetate of potash, with unusual success. It should be well diluted, and may be combined with lemon-juice. (Dr. W. Moore, p. 30)

Chronic Rheumatism and Gout.—Apply thin sheets of gutta percha over the parts; this produces great local transpiration, and the pain is generally considerably relieved. (Dr. Wetzler, p. 31.)

Scarlatinal Dropsy.—That purgative which acts most directly as a hydragogue is the best adapted for use in the treatment of this disease; but it must be one which at the same time is not followed by any disproportionate exhaustion, or by any torpid reaction. The combination of jalap and cream of tartar is most

admirably suited to these ends. The development of that pigmentary condition, made apparent by adding nitric acid to the boiling urine, in combination with albumen, is of the greatest import. The presence of much fatty matter in the casts of the tubes seen with the microscope, also indicates an advanced state of degeneration. (Dr. Basham, p. 25).

Typhus Fever.—Secure free ventilation, cleanliness, and particular attention to the digestive organs; commencing with an emetic dose of ipecacuanha, aperients, and saline medicines. In the low states, give sulphate of quinine three times during the day, and mild nourishment at frequent intervals during both day and night. Alcoholic stimulants are not required at any period of the disease, and are sometimes even injurious. (M. J. Higginbottom, p. 280.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—In cases of chorea, if complicated with struma, administer the iodide of zinc; if no indications of this disease exist, the sulphate may be used. (Dr. Barlow, p. 44.)

Neuralgia.—The following plan of treatment is productive of most satisfactory results. A small glass syringe, with a perforated steel nozzle, is made to penetrate the tissues, for the depth of an inch or so, at the most painful spot, and about twenty minims of Battley's sedative solution is injected. This must be repeated, if necessary, good food and tonics being meanwhile given; the relief from pain is often followed by a rapid improvement in the general health, the appetite returns, and the disturbed nervous system is restored to a state of health. (Dr. A. Wood, Dr. G. L. Bonnar, p. 45.)

Valerianate of ammonia will be found an excellent remedy in cases of neuralgia. It has been tried by various eminent physicians with much success. (Dr. O'Connor, p. 289.)

Tetanus.—On the first appearance of this disease, try if you can remove the source of irritation, by dividing the nerves going to the part; or, if the wound be in the skin and very trifling, either make deep incisions around it or excise it altogether; but if the wound be such as would materially injure the limb independently of the tetanic complication, it is better to amputate at once. If this does not suffice, we must use some agent to render the nervous system less sensitive to the irritating cause, its effect being long kept up—such agents we have in chloroform, nicotine, and wourali. Chloroform causes congestion of the bronchial tubes, and nicotine has an extreme depressing influence on the circulation. Now wourali does not act on the heart or other involuntary muscles at all, and preference should be given to it. Artificial respiration will be necessary, if that function become seriously embarrassed. (Dr. S. H. Hobart, p. 40.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

Nævi.—Pass two pins at right angles to each other under the mass, and place a ligature around the whole, tying it tightly and withdrawing the pins. At the end of four hours withdraw the ligature. A scab forms, which drops off in fourteen days or so, without any suppuration or open sore, and leaving but a very slight scar. By this means the current of blood is arrested, and that in the tumour becomes consolidated. One great advantage is, that the part encircled does not slough, but becomes atrophied and drops off. (Mr. J. C. Forster, p. 168.)

Remove the epidermis by a blister, and then touch the denuded dermis with a pencil of charpie wetted with perchloride of iron, at 30° of the hydrometer of Baume (Sp. gr. 1·245). (M. Paul Broca, p. 169.)

Rheumatic Pericarditis.—Dr. Todd treats this and other forms of rheumatic inflammation on a stimulant plan throughout, not with a view of cutting short the disease, but of supporting the patient under it, and rendering convalescence more rapid. In a case lately under treatment, alkalies were given alone, till the appearance of the pericarditis, when opium in grain doses, every four hours, and eight

ounces of brandy daily, were administered. Pneumonia of both lungs came on, and the brandy was ultimately increased to thirty-five ounces daily. No leeches or blisters were throughout employed. He left the hospital to all appearance quite well at the end of a month. (Dr. R. B. Todd, p. 50.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Chronic Bronchitis.—In cases of bronchitis of long standing, the following mixture is very useful:—Take of tannin three grains; extract of belladonna three quarters of a grain: extract of conium two and a half grains; infusion of senna three ounces; fennel-water and syrup of marsh-mallows of each one ounce and a half: M. A tablespoonful to be taken every two hours. (M. Berthel, p. 55.)

Foreign Bodies in the Air Passages.—*Tracheotomy.*—An ingenious and advantageous plan of operating in these cases, is to lift up a piece of the trachea like a flap, with a common tenaculum, after the tube has been laid bare, and then, having allowed the foreign body to be expelled, to drop the flap down again into its original position. (Mr. J. C. Forster, p. 170.)

Tuberculosis.—The proximate cause of the tubercular diathesis is the decrease in the system of the phosphorus which it contains in an oxygenizable state. Therefore give some preparation of phosphorus in the lowest possible degree of oxydation, and at the same time, one which may be directly assimilated: such a remedy is the hypophosphite of soda, or lime, which should be given in doses of from ten grains to a drachm to adults in the twenty-four hours. The general symptoms will rapidly disappear. (Dr. J. F. Churchill, p. 55.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

Cholera.—This depends on the withdrawal of the nervous power of the brain and spine from the nerves of the body presiding over respiration and digestion, particularly the pneumogastric. In the treatment then we must have recourse to some remedy possessing an instantaneous effect over the brain and nerves. Such a remedy we have in an emetic acting directly on the brain, the use of which is generally followed by an amendment of the pulse, and other favourable symptoms. This must be followed by an opiate. When the pulse is small and thready, respiration almost suspended, and lividity pervading the whole system, owing to the contracted state of the lungs, chloroform is the grand remedy. When first inhaled the pulse becomes full and bounding; after a time it again begins to sink, then withdraw the chloroform for a time, repeating the process till the patient lapses off to sleep. When there is incessant vomiting give thirty or forty minims of tincture of opium, and then administer the chloroform, which instantly checks the vomiting, the opiate becomes absorbed, and sleep soon follows. (Mr. A. C. Boate, p 91.)

Asiatic Cholera.—A case lately occurred to Dr. Henry Madge, of Howland street, Fitzroy-square, which was treated successfully on the following plan. Hot water was applied to the feet, warm flannels to the legs and arms, a large mustard poultice was placed over the whole abdominal region, stimulants were given, and two tablespoonfuls of the following mixture every hour:—Acetate of lead, fifteen grains; acetic acid, half a drachm; tincture of opium, half a drachm: tincture of capsicum, eight minims; and peppermint-water to six ounces. Dr. Madge believes calomel to be injurious in these cases. (p. 95.)

Diarrhœa.—The best diet as a general rule is milk and lime-water, which is very readily absorbed, and sufficiently nourishing. When there are lumps of feculent matter in the stools, and a smell like that of normal excrement, give purgatives. When this is not the case purgatives will not be found to be beneficial. When the products of acute inflammation are found mixed in the stools, such as white and opaque mucus, flakes of fibrine, epithelium, &c., leeches, fomentations, warm hip-baths, and poultices to the abdomen are the appropriate treatment, together with the administration of calomel, ipecacuanha, and carbonate of soda.

In children it often arises from the irritation of teething. The gums must be lanced. Opium in the form of Dover's powder (half a grain every three hours) is here of striking utility. When blood is passed from the bowels, and no fever is present, the most powerful means of checking it are turpentine and acetate of lead. When the diarrhœa is from ulceration of the ilia, adhere to the milk and lime-water diet, giving chalk and opium; or, if these fail, sulphate of copper. When there is a simple flux of transparent mucus, without fever or pain, or any fibrine or blood in the motions, use vegetable astringents, such as logwood, bark, kino, and tannin. When the stools are bulky and copious, opium must not be given, but it is of great use in cases of tenesmus. (Dr. T. K. Chambers, p. 72.)

Dover's powder in five grain doses, given in a teaspoonful of gruel, and repeated every loose stool, is one of the simplest and most effectual means of treating cases of ordinary diarrhœa. (Mr. W. O. Markham, p. 91.)

Digestion *in Disease*.—In most chronic diseases, especially blood diseases, as anæmia, if we can remove the functional impediment to the proper assimilation of food, arising from indigestion, we go a great way towards ameliorating or curing the complaint, and we further the proper action of other remedies employed. Thus, if in anæmia, during the administration of iron, we can improve the condition of the alimentary canal, the stools from consisting chiefly of semi-digested matter becoming natural, the patient rapidly recovers strength and vigour. Again, if elaterium be given when the portal system is congested, it must be given in much larger doses, three grains being borne sometimes, than when the condition is removed by a few leeches to the anus, after which half a grain will produce excessive purgation. (Dr. T. K. Chambers, p. 62.)

Dyspepsia.—In excessive acidity and flatulence of the stomach, regulate the quantity and quality of the food, keep the bowels open by some warm aperient, as a pill of rhubarb or capsicum, just before dinner. To afford temporary relief, give a few grains of bicarbonate of soda, about an hour after meals. Let the drink be water, and if a stimulant be required, a little brandy or sherry well diluted. In that form of heartburn or cardialgia which occurs in nervous persons and in depressed states of the system, to afford temporary relief give a little carbonate of soda after meals, with bismuth, hydrocyanic acid, or morphia; but a permanent cure can only be effected by invigorating the system by preparations of valerian, iron, and quinine. If pyrosis be present, we can check it by astringent medicines, as bismuth, kino, &c. Nitrate of silver, or nux vomica, as recommended by Dr. Budd, is very useful. If the diet has been too poor we must improve it before we can expect any change. This symptom is often accompanied by severe pain, which is best relieved by sedatives, as hydrocyanic acid, with which a little carbonate of soda may be combined. In all cases of dyspepsia no medicines can effect a cure unless great attention be paid to diet, which should consist of plain dressed animal food, chiefly roasted, and eaten slowly with a small proportion of well-boiled vegetables. Fat, fried, baked, or stewed meats should be avoided, also pastry, salads, acid or dried fruits, pickles, fermented liquors, and rich fish, as salmon or herrings. Sedentary habits should be avoided. (Dr. Lees, p. 82.)

A sense of fulness or flatulence of the stomach after meals will be prevented by taking a pill of four grains of rhubarb with one of capsicum before meals. If the patient loathes the sight of food, give sulphate of quinine or pepsine. If the dyspepsia be accompanied by much debility and nervous irritability, sulphate of zinc in doses of a grain, gradually increased, given three times a day, as recommended by Dr. Golding Bird, will be of most value. (Dr. Lees, p. 87.)

Instead of the insoluble subnitrate of bismuth, use the subcarbonate, which is readily soluble in the gastric juice, and neutralizes the acids which are found in excess in the stomach, in which respect the subnitrate fails. The subcarbonate seems to be sedative in its action during the first days of its employment, and subsequently to have a tonic influence. It is peculiarly suitable in cases of dyspepsia in which the tongue is red and pointed, or the digestion laborious, and accompanied with putrid or acid eructations. In the vomiting and diarrhœa of children it is of much use. It should be given before meals, and is perfectly insipid. (Prof. Hannon, p. 285.)

Eructation and Vomiting.—When from simple relaxation of the œsophagus

give astringents, as gallic acid combined with a little rhubarb. When from excess of air, swallowed from irregular nervous action, as in hysteria and chorea, give valerian, either in infusion of the herb or combined with ammonia. When these fail give strychnine or creasote. The shower-bath is a very powerful remedy. When from the formation of foreign gases from chemical decomposition, no agent is so useful as sulphurous acid, which may be given as hyposulphite of soda; if this chance to disagree, charcoal will scarcely fail to arrest gastric fermentation. When chronic vomiting is sympathetic, *i.e.* from some disease or condition elsewhere, as in peritonitis, pregnancy, &c., give hydrocyanic acid. When from gastric mucous flux, with copious formation of acid, give carbonate of magnesia. When the vomiting is accompanied by much local pain, as from gastric ulcer, malignant tumour, peritonitis, hernia, perforation of the gut, opium is the remedy of most value. When at the commencement of fevers and in cholera, apply chloroform on cloth to the epigastrium. Milk and lime-water, as a sole diet, will often alone stop chronic vomiting; complete rest and absence from excitement must accompany it. Chloroform does not arrest the nausea of sea-sickness, but it controls the violence of the straining. (Dr. T. K. Chambers, p. 70.)

If vomiting be caused by some structural disease of stomach, as ulcer, scirrhus, &c., give a drop of creasote, or five or ten drops of medicinal naphtha, or a combination of bismuth with gallic acid and opium, as recommended by Dr. Turnbull. If caused by a morbid state of the blood, as in scarlatina, erysipelas, cholera, &c., our treatment must be chiefly directed to eliminate the "materies morbi" from the system by means of the skin and bowels. Vomiting may be from a mechanical cause, as from the violence of an habitual cough, or a stooping occupation. If vomiting be from a sympathetic cause, as disease in the womb or brain, or calculus in the gall duct, kidney, or ureter, we must endeavour to remove this, the origin of the vomiting. Thus it has been necessery in some cases to produce abortion, the life of the patient having been in danger from the long continuance of this distressing symptom. If caused by the passage of a calculus, either from the gall-bladder or kidney, large doses of opium are required, the first dose combined with aloes and carbonate of soda. In some cases chloroform may be given with good effect. For the cure of nervous vomiting, that is, vomiting induced by some modification of innervation of the stomach, unconnected with any change of structure, a proper regulation of the mind is essential. A slight but continuous action must be kept up by some mild aperient medicine. In some cases, effervescing draughts, with prussic acid or laudanum, will succeed; and in hysterical cases, assafœtida, valerian, and creasote will be found useful. When the patients are anæmic give iron with bitter tonics. External counter-irritation is often of much use. The diet must be very simple and easily digestible. (Dr. Lees, p. 275.)

Gastrodynia may occur, 1st, When the stomach is empty. This depends on acrimony of the digestive fluids; it is relieved by taking food, or by alkaline remedies, as aromatic spirit of ammonia or magnesia. 2nd. Immediately after taking food; then it generally arises from chronic inflammation, or morbid irritability; or, 3rd, it may begin from two to four hours after a meal; then it is generally from a similar state of the duodenum. (N.B. From the seat of the pain do not mistake it for disease of the liver.) This will be best relieved by the administration of aloes, lime-water, bismuth, and opiates, combined with rhubarb. 4th. It may occur at uncertain intervals, in most violent paroxysms, with a feeling of distension, much anxiety, and great restlessness. This depends on over-distension of the stomach, or may sometimes be seated in the arch of the colon, and is best relieved by carminatives or by a strong injection. Hydrocyanic acid is a most valuable remedy in these cases, also opium, and hot stupes should be applied externally. (Dr. Lees, p. 84.)

Heartburn.—In anæmic feeble persons this is generally from over-sensibility of the nerves to the natural acidity of the stomach. This is relieved by alkalies—but alkalies prevent perfect digestion by neutralising the acidity necessary to a proper performance of the digestive function. The treatment must therefore be directed to alleviate the over-sensibility of the nerves, temporarily, by hydrocyanic acid and bismuth; permanently, by strengthening the general nervous system by quinine and iron, combined with sea-bathing, or the shower-bath. In other cases *heartburn* depends on too large an amount of acid being present in the stomach,

resulting from chemical decomposition of the sugar in the chyme, owing to decreased vital power. The treatment here is to increase the power and vigour of the stomach. The activity of the pepsine may be much augmented by neutralizing the saliva collected in the stomach and œsophagus just before the meal, by a little hydrochloric or lactic acid; for the saliva arrests the solvent action of the gastric juice in a close proportion to its amount. The quantity of gastric juice may be further increased by supplying one of its most important constituents, water, which is best taken as cold as possible about half an hour after the meal. (Dr. T. K. Chambers, p. 65.)

Hemorrhoids, Internal.—M. Amussat applies to these a stick of destructive caustic by means of an ingenious instrument described and figured at p. 171. But as it may not be convenient to every one to obtain this instrument, the tumour may be seized with a pair of forceps, and a stick of caustic potash applied with a rotatory motion, so as to penetrate the hemorrhoid. The parts must be well washed after this. Nitric acid is a very suitable remedy where the prolapsus and bleeding hemorrhoids are small, but if larger, the free application necessary often causes severe inflammation and excruciating pain, and the relief is often only temporary. (Mr. J. Hamilton, p. 171.)

Method of Using the Ecraseur for.—The bowels having previously been well opened, place the patient under the influence of chloroform, and on his left side, the right leg and thigh being flexed. Draw out the hemorrhoidal mass, and include the whole within a firm twine ligature, along the track of which the chain of the écraseur must be placed, and shortened till it constricts the tumour. The tumour must be very gradually removed, the chain being slightly tightened about every fifteen seconds. An almost bloodless surface will be left, on which the track of the wound will be scarcely discernible. Graduated pressure must be now maintained against the anal opening, by means of the usual perineal bandage, and the bowels locked up for seventy-two hours after. It will be necessary to pass up daily an oiled elastic bougie, gradually increased in size, to prevent adhesion, and so stricture of the rectum. (M. Chassaignac, Mr. J. O'Doherty, p. 289.)

Hernia, *Strangulated.*—Dr. Durand, of Havannah, has repeatedly succeeded in effecting the reduction of this, by giving the patient a cup of hot coffee every quarter of an hour. A case is related in which it succeeded, no application being made to the tumour, and the taxis having been employed in vain. (p. 170.)

Intestinal Catarrh.—In those cases of intestinal catarrh in children in which the mucous membrane becomes ulcerated around the anus, give an enema containing about a drachm of borax. (M. Bouchut, p. 300.)

AFFECTIONS OF THE BONES AND JOINTS, &c.

Amputation at the Ankle Joint.—In performing this operation, after making an incision from malleolus to malleolus under the os calcis, as first suggested by Professor Syme, make a straight incision at right angles with the first to the back part of the heel, on the outer side of the foot, a little above and parallel with its outer margin, between, therefore, the point of the outer malleolus and the margin of the foot. By this means the operation is considerably facilitated, and pus does not subsequently collect in the cup-shaped flap. The principal bloodvessels lie at the fore part and inner side of the ankle joint, and beneath the foot. (Mr. R. Quain, p. 147.)

Artificial Legs.—The pin should not be placed in the centre of the stump, but more anteriorly, i.e. in the same position as the tibia should occupy in the normal limb; and in order to obtain elasticity at the point corresponding to the ankle-joint the weight should be transferred from the pin to an arched foot. These weight-bearing parts may now be covered with pliable leather, stuffed with cotton wool, in order to imitate the shape of a perfect limb. (Mr. K. Cornish, p. 152.)

Dropsy of the Knee-Joint.—Provided that the case be one of simple uncomplicated chronic dropsy, Dr. Macdonnell's plan of injection with iodine will probably prove successful. The puncture should be made at the part most remote from the joint. If the sac is very large the injection should not be used directly after the first tapping, but time should be allowed for the sac to collapse somewhat.

When the injection is going to be used, apply a wet bandage from below the knee upwards to a level with the upper edge of the patella, so as to push the remainder of the fluid above the joint into the pouch of synovial membrane. When the fluid is drawn off, inject about two drachms of the strongest tincture of iodine, with an equal quantity of lukewarm water. Allow this to remain, moving the joint a little, that the fluid may be diffused. The wet bandage must now be carried further up the limb, the aperture being first closed with adhesive plaster. A long padded splint should be afterwards applied. (Dr. R. Macdonnell, p. 143.)

Flap Amputations.—Cut from without inwards, but at first only down to the fascia, to allow for the greater retraction of the skin than of the muscles. Separate these superficial flaps from the subjacent muscles to a sufficient extent; then divide the latter by two incisions so as to form flaps. In the after-treatment of the part, Mr. Paget bandages the stump from above downwards, the soft textures being at the same time drawn by an assistant over the ends of the bone. (Dr. J. Sloane, p. 124.)

Excision of the Elbow-Joint.—There are two objects to be attained by this operation, viz. First to remove all the diseased bone, and second, to do this in such a way that a useful and movable joint may result. It is always far better to remove the whole of the articular surfaces of the joint, than to remove the diseased portion only, for the disease often extends afterwards to the other bones; and there is often more suffering and fever than when the whole is removed. The mode of performing the operation will be found minutely described in the volume. (Mr. E. R. Bickersteth, p. 148.)

Excision of the Hip-Joint.—After the performance of this operation a swing should be used, sufficiently strong to suspend the entire body. The wound should be left uncovered, except by the dressings, in order to secure a depending escape for the discharge. By this means there is no necessity to disturb the patient to allow of the evacuation of the bowels, and the accumulation of the discharge from the wound is prevented. (Mr. Heath, p. 137.)

Osteotrite.—For the removal of carious bone, either from the surface, or from the interior of cavities, use the osteotrite, invented by Mr. Marshall; it consists of a handle similar to that of the common gouge into which is fixed a steel shaft, terminating in a round somewhat conical head, which varies in size, but which possesses a series of spiral cutting edges, radiating from two points on the sides of the vertex. It is used by a rotatory motion, and cuts like a saw or rasp, and removes diseased structure with perfect ease. It does not leave behind it any loose splinters, and from its strength is not liable to break or slip. (p. 152.)

Paper Splints.—In the treatment of fractured legs, after the swelling has subsided, apply paper splints made by adapting in successive layers strips of brown paper smeared with thick paste. This soon hardens, and a bandage may be lightly applied over it. The whole forms a very light hard case, enabling the patient to leave his bed at the end of ten days or a fortnight; and it is impossible to cause over-pressure, as the starched bandage may do, for the paper tears if pulled too tight. (Mr. J. C. Savery, p. 154.)

Plaster of Paris Bandage.—In cases where the ordinary starch bandage is used at present, the plaster of Paris bandage may be advantageously substituted, as it is lighter and dries quicker, and hence is less liable to be spoiled by the patient's movements during the time of drying. It is made by rubbing dry plaster of Paris well into an ordinary bandage. The patient's limb is first enveloped in a roller, and over this the plaster of Paris bandage slightly wetted is applied. As each turn is laid on it is more thoroughly moistened, and then lies quite evenly and comfortably. Additional strips may be laid on, and supported by turns of the principal bandage at any parts where more pressure is required. (Mr. Erichsen, p. 286.)

Resection of the Knee-Joint.—There is a great practical distinction between strumous diseases of the knee-joint, commencing within the cavity of the articulation, and those originating in the cancellous structure of the heads of the bones entering into the formation of the joint; for every diseased joint, with the exception of that form of diffuse strumous infiltration of the heads of the two bones, is, in general, well suited for the adoption of resection in preference to amputation. The surgeon should not always decide which operation he will perform, till he has obtained a clear view of the state of the joint. (Mr. P. C. Price, p. 140.)

TALIPES VARUS.—The theory of stretching the new material formed in the reparation of tendon, after division by the knife, is altogether erroneous. The new material does not admit of being stretched like india-rubber, and then, unlike this material, of being retained at any required length. Our object must therefore be to regulate the length of the new material during its formation. In *slight* infantine cases, divide all the tendons necessary at one operation, and after the foot has been retained in its deformed position by a bandage and splint for three days, apply Scarpa's shoe, and in the course of two or three weeks bring the foot into its natural position. In *severe* cases the treatment, both operative and mechanical, must be divided into two stages; the first to overcome the inversion of the anterior part of the foot, and thus convert the case into one of equinus—the second stage to cure this equinus. The first stage is accomplished by dividing the tendons which invert the foot, and then the cutaneous punctures being healed by the application of a bandage and splint to the outer side of the leg and foot, gradually to produce eversion. The second stage is accomplished by division of the tendo-Achillis, and then by the use of Scarpa's shoe, to produce flexion at the ankle joint. If at the end of the fourth or fifth week the tendo-Achillis should still appear to be strong the shoe should be worn only at night, and the frequent and regular employment of passive motion is more to be relied on than any mechanical aid. (Mr. W. Adams, p. 154.)

In all *relapsed cases* of talipes varus, in which the deformity can be removed, the relapse is owing to some defect in the after-treatment. Among defects in the primary treatment are, omission of the division of the posterior tibial tendon, division of the tendo-Achillis at beginning instead of at the end of the operative treatment. Among defects in the after-treatment are omitting the use of such retentive mechanical means as the case may require, and of active and passive muscular exercise, in the right direction. The earlier the treatment is commenced the less is the tendency to relapse. In very rare cases there is a congenital defect in muscular development. Here some form of retentive apparatus must be worn by the patient during the remainder of life. In the treatment of these cases, where any marked degree of inversion remains, and is accompanied with rigidity of the foot, treat the case throughout as if nothing had been done. In most cases division of the tendo-Achillis, or of this and the plantar fascia will suffice. (Mr. W. Adams, p. 157.)

Unnecessary Orthopædic Operations.—Operations are resorted to too frequently in the cure of talipes varus. As a consequence, though doubtless the cure is more speedy, we have various permanent ill effects which might have been avoided. Thus, the fleshy part of the calf is too small and too high up in the leg from contraction of the muscle, and the free motion of the ankle-joint is impeded by the prolonged rest which has been necessary to the success of the operation. Where, then, the foot can be abducted by the hand of the surgeon, and whilst so abducted can be bent to a right angle, by the use of gentle violence, a cure may be effected without tenotomy, before the usual age at which sound children attempt to walk, and even if an operation be performed, mechanical treatment cannot be dispensed with before this age. When the surgeon cannot perform this movement with the child's foot, and the imperfectly developed os calcis seems tied to the back of the tibia and fibula by deep ligaments, and a deep depression exists between the great toe and heel on the inner side of the foot, the case cannot be cured without operation. The secret of curing the case without operation consists in applying the bandage and splints (which may be made of gutta percha, moulded leather, or tin) so as not to distress the infant. They should be removed at least three times a day and manipulation practised, and reapplied more with a view of preventing relapse into a wrong position than of forcing the lapsed part into a better one; and during this treatment recollect first to obtain eversion of the point of the foot before attempting depression of the heel. Although a case may be apparently cured, yet in the course of time deformity may again return owing to the muscles and other textures on the originally contracted side of the limb not keeping pace in growth with the other. Such cases can generally be restored by due pains in efficient instrumental and manipulative treatment. (Dr. W. J. Little, p. 161.)

AFFECTIONS OF THE URINARY ORGANS.

Diabetes.—The essence of diabetes is an arrest of the normal changes taking place during the digestion of starchy matters at their second stage, or that of conversion into sugar, the cause being a deficiency or vitiation of the digestive fluids. Now, if this cause can be obviated or removed, we have a partial or total disappearance of sugar from the urine. We have in rennet or pepsine a remedy which effects a healthy digestive process in an unhealthy viscus. Under its use the sugar partially or entirely disappears, and there is consequent improvement in the condition and health of the patient. (Dr. D. Nelson, p. 117.)

In a case lately treated by rennet the average quantity of urine voided fell from 10·108 to 6·988 cubic centimetres. The rennet had been administered twelve days, when, from some non-specified cause, the patient suddenly died. The diet was not altered in order that the results of the experiment might be as accurate as possible. (Dr. Iverson, p. 119.)

Hydrocele.—Puncture the swelling with a common darning needle, which rotate about for a few minutes, and the fluid will thus be allowed to escape into the cellular tissue of the scrotum, whence it will be speedily absorbed. This is perfectly simple and almost painless, and in a tolerably large number of cases a permanent cure will follow. (Mr. E. Stanley, p. 183.)

Hydrocele-Photoscope.—When the translucency of the swelling is made a means of diagnosis, much trouble may be avoided by using a tube of tin about 7 inches long, 1¼ in diameter at its larger end, and tapering to ¼ at the other, where it is furnished with a wooden eye-piece. It must be blackened inside. In sunlight a candle can be thus dispensed with. (Mr. J. C. Savery, p. 183.)

Incontinence of Urine.—Belladonna in doses of one-twelfth of a grain of the extract, about three times a day, will be found to have a most marked and beneficial effect in some cases of incontinence of urine. A case is given where it succeeded after everything else had failed. (Mr. G. B. Masfen, p. 123.)

Retention of Urine.—If a catheter cannot be passed, place the patient under the influence of chloroform; if the stricture be spasmodic it will be at once relaxed, and even if a permanent one, will often be relaxed so far as to admit of the passage of an instrument. (Mr. J. C. Forster, p. 182.)

Stricture of the Urethra.—If it be inflammatory stricture from severe gonorrhœa, the mucous membrane of the urethra being swollen, and the muscles surrounding it in a state of spasm, pass a rather small elastic catheter at once; but if the case be not severe, you may modify your practice: put twelve leeches to the perineum, place the patient in a warm bath, give him an ounce of castor oil, and thirty drops of laudanum on it, and he will pass his water either in the bath or when the oil operates; and cases of permanent stricture may generally be relieved in the same way, no instrument being used at all. But the cure of permanent strictures must be accomplished by promoting the absorption of the superadded tissue, by the pressure exerted by means of the catheter. You must not mind being foiled on the first attempt to pass it. (Mr. J. Adams, p. 176.)

Prof. Syme says, with regard to the use of external incision in the treatment of stricture that it is not true that wounds of the urethra, like those of the skin, must heal either by adhesion or granulation, and so the old contraction be restored with greater firmness than before. It has been repeatedly shown that the most tightly contracted urethra may remain perfectly patent after division of the stricture, and in the bodies of some persons who have died several years after the operation, the canal has been found actually wider than natural, and the surface of the previously deranged mucous membrane not distinguishable from the neighbouring portion. (Prof. Syme, p. 174.)

In extremely tight strictures use a tapering bougie of Berlin silver, very much attenuated towards the extremity, which is slightly probe-pointed, discarding fine elastic gum and catgut bougies, which are unreliable instruments. (Prof. Syme, p. 182.)

When so extremely narrow that no ordinary sound or catheter will pass, use a probe-pointed catheter. Its last two inches are made perfectly solid, and thus the extremity can be made of any size or form desired. About two inches and a half *from* the end the channel begins, and the small eye is placed. Finally, the whole

is strengthened by a small steel rod or stilet, which accurately fills the interior, and to which the handle is fixed and the rod screws in. The handle being removed with the stilet, it is easy to screw in its place a small steel rod, and slide over it a fine gum-elastic tube made of silk into the bladder if desired, after the solid instrument has been retained a few hours. (Mr. Henry Thompson, p. 180.)

AFFECTIONS OF THE SKIN.

Boils and Carbuncles.—The manner of operating by incision is neither requisite nor safe, and is much surpassed in efficacy by the use of potassa fusa for this purpose. It should be fresh, and unaltered by exposure to the air, and may be inserted into a goose quill by way of handle. The best time for opening, is when the skin has become dusky, and is perforated by pin-hole orifices, whence issues an ichorous oozing. To prevent the caustic running and destroying healthy skin, a dossil of dry flocky lint should be applied upon and around the part to which the caustic has been applied. The carrot poultice is the best that can be applied afterwards, with a view of cleaning the sore, and a solution of chlorinated soda is very useful at particular stages of the sore. A weak caustic, like nitrate of silver, is of no use, but even prejudicial in these cases. (Mr. B. Travers, jun., p. 189.)

Chronic Eczema *in Children*.—First get the scabs or crusts separated, by means of poultices, if the spots are limited, and are not settled on the head, face, and neck, where these applications are not suitable. Before applying them, it is a good plan to moisten the surface with a solution of carb. of soda (℥ii. to ℥ viii.). When the surface is large, a water dressing is to be preferred; a little sub-carbonate of potash being added to the water. If situated on the head, face, or neck, paint the scabs over with a mixture of carb. of soda and cod-liver oil, removing the crusts carefully next morning, and moistening the surface with the alkaline lotion. This must be repeated as often as necessary, till crusts cease to be formed, and a red, inflamed, but painless surface is left. Next, we must remove this condition of the skin. One of the best means to this end, is the application of a solution of ℥i. of acetate of zinc, and the same of acetate of lead, in ℥ viii. of distilled water, adding to this, at the time of using it, an equal quantity of strong chamomile infusion. The last indication is to restore the activity and healthy tone of the skin, by such hygienic measures as fresh country air, free exercise, a well regulated and wholesome diet. and such local applications as weak solutions of alum, and sulphate of zinc. (Dr. Behrend, p. 187.)

Cicatrices from Burns.—Make a number of short transverse incisions in the cicatrized tissues; these gape much when made. The wounds are dressed with narrow pieces of strapping, so as to approximate the end of a cut to each other, not the sides—and lengthen out the old cicatrix as much as possible. (Mr. F. C. Skey, p. 187.)

Plastic Operations.—*For Restoration of the Lower Lip*.—Two vertical incisions, about three-quarters of an inch in extent, are made through the everted lip down to the bone. These incisions are so placed as to divide the upper portion of the everted lip into three parts—the middle being equal to one-half of the natural breadth of the lip, while the two lateral portions are each equal to one-fourth. From the lower end of each vertical incision the knife is carried in a curving direction outwards and upwards to a point situated about one inch from the angle of the mouth opposite to the second molar tooth of the upper jaw. The two flaps thus marked out and deeply incised are then separated from the bone, the mucous membrane uniting them to the alveoli being freely divided. Lastly, a bare surface is made along the alveolar border of the middle portion of the everted lip. The incisions being now completed, the lateral flaps are drawn upwards and united by twisted sutures to each other in the median line, and to the middle portion of the everted lip at their inferior border. In this way a new lip is, as it were, built upon the middle portion of the old one. (p. 183.)

Upper Lip.—A crucial incision is made (*en saltire*), having its point of intersection immediately below the septum of the nose. Each limb of this incision is about one and a half inch in length. The two limbs on each side diverge moderately as they pass outwardly to the cheek, and enclose between them an acutely

angular flap of skin and other tissues. The crucial incision is extended deeply through the entire substance of the imperfect lip and the cheeks. The parts implicated in the incisions are then freely loosed from their attachments to the superior maxillary bone by the knife being passed upwards between the bone and the remnant of lip. The parts being thus detached, the two lateral angular flaps are drawn across the median line, dovetailing with each other, and thereby increasing the depth of the lip at the expense of its breadth. In this position the flaps are retained by one pin and twisted suture. (p. 184.)

Contraction of the Neck.—In cases where the chin is drawn down to the sternum, divide every band of adventitious fibrous tissue beneath the scar until the bottom of the wound discloses a loose, healthy, cellular tissue. A piece of sound skin must now be transplanted to this wound from the neighbouring parts. Avoid very accurate adaptation of the flap by suture, as great tension renders it liable to slough. When the scars are very numerous or extensive it is better to repeat the operation, rather than do the whole at once. (Mr. T. P. Teale, p. 183.)

Scabies.—The diagnosis of this disease is occasionally difficult; it will be much facilitated by the knowledge of the fact, that the ova of the acarus may be readily found with the microscope, attached to the roughened and undermined cuticle in the neighbourhood of the vesicles. (Dr. Gull, p. 149.)

Ulcers, *Old Callous.*—If an ointment consisting of anhydrous sulphate of zinc, mixed with glycerine, spread upon bits of lint the size of the ulcers, be applied to them, and allowed to remain a few hours, most acute pain will be caused, and the ulcer will be corroded; but when the slough separates, the granulations will rapidly spring up to a level with the surrounding parts, and in most cases will soon become skinned over. The sulphate of zinc is as suitable, but not superior to the chloride for this purpose. (Dr. E. Watson, p. 259.)

VENEREAL AFFECTIONS.

Chancre.—Apply pure acetic acid by means of a glass tube thoroughly to the part, preventing its diffusing itself around by means of charpie. On the third day a whitish eschar separates, and a clean healthy sore is left, which will rapidly heal by common dressing. On the first and third day an active purgative is administered. (Dr. Collmann, p. 200.)

Gonorrhœa.—Evans, Rose, and Guthrie, during the Peninsular war, in a situation peculiarly adapted for observation, came to a knowledge of this fact—that the catamenial discharge in the one sex will produce gonorrhœa in the other. Mr. Evans was sure also that the ordinary secretions of the female will produce even venereal disease. (Mr. F. C. Skey, p. 192.)

Gleet and Gonorrhœa.—Give your patient an injection of half a grain of sulphate of zinc to an ounce of rose-water, about five times a day. Keep up his system with tonics, allowing his usual diet, unless egregiously faulty, and banish purgatives, antimony, &c. Administer internally the tinctura ferri or ferrocitrate of quinine, and the balsam copaibæ in small doses only. (Mr. F. C. Skey, p. 193.)

Syphilis.—No mode of mercurial treatment removes the symptoms of syphilis so readily as fumigation; none is attended with so little mischief to the patient's constitution, and after none is a relapse so seldom experienced. Calomel is the best preparation to use for the purposes of fumigation; it is readily sublimed—is not decomposed thereby—and but a comparatively small quantity is required. It is found to answer the purpose better if combined with vapour of water; therefore, in any lamp used for this purpose, provision must be made not only for volatilizing the calomel, but a small amount of water likewise. (Mr. H. Lee, p. 195.)

Secondary syphilis may be treated entirely without mercury, and on the following simple plan; and not one in a hundred instances will return with constitutional symptoms. Stomachic and tonic remedies must be administered, conjoined with a good diet and the following formula, viz.:—Sulphur, one drachm; sulphuret of antimony and nitrate of potash, of each five grains; mixed into a powder, half of which must be given night and morning, and persevered in until a cure is established. (Dr. Marsden, p. 199.)

AFFECTIONS OF THE EYE AND EAR.

ARTIFICIAL PUPIL.—A very useful instrument is employed by Mr. Bowman in these cases, consisting of a needle-pointed hook, which enables the operator to enter the cornea, and drag out the iris with the same instrument: thus there is less chance of the escape of the aqueous humour, and a very small opening is made. There is no difficulty in withdrawing it. A little care is necessary lest in using the hook the lens be wounded by the needle point projecting beyond it. It is peculiarly adapted to cases where extraction has previously been performed. (Mr. W. Bowman, p. 207.)

BELLADONNA.—When used to dilate the pupil, the extract gets hard and contracts, producing a disagreeable tightness: this may be avoided by mixing it with a little glycerine. (Mr. J. C. Savery, p. 210.)

CATARACT.—A single cataract of soft consistence occurring in an eye otherwise healthy, should be submitted to an operation for its cure. Confusion of vision seldom results, and when present is susceptible of correction by an optician's lens. (Mr. J. V. Solomon, p. 208.)

Linear Extraction of Soft Cataract.—Provided that the lens is soft and without a nucleus, it may be removed at once by the method adopted at the Moorfields Hospital in such cases, and there called linear from the corneal incision being a line more or less in width. With a broad needle, make a puncture on the outer side of the cornea, about a line in width, and with the same needle lacerate the capsule and break up the lens. A channelled curette must now be introduced, through which the fluid part of the lens may escape. By a little manœuvring the capsule itself may be passed into the aperture, and being seized with the forceps, may be bodily removed. (Mr. Critchett, Mr. Bowman, p. 207.)

EUSTACHIAN TUBE, *Obstruction of the.*—When the tympanum is healthy, obstruction of the eustachian tube from a thickened and congested faucial membrane, can in several cases be removed by general measures. The patient must take abundant and active exercise in the open air, the throat must not be wrapped up closely by handkerchiefs, flannel should be worn next the skin, and the patient should have a cold plunge bath every morning, though, if it be a young child, the body may be rubbed instead with a coarse wet towel. The most efficient local treatment is the application of the nitrate of silver. This is best applied in the solid form, and a holder can be contrived so as to be bent at such an angle that the caustic may be applied directly to the opening of the tube. Though temporary benefit is derived from the use of the eustachian catheter, yet its effects being rather to increase the congestion, its use should be avoided. But if after a time no benefit be derived from the above general and local treatment, the catheter may be introduced once, as it may facilitate a cure by removing mucus from the tube, or by separating the lips of the faucial orifice. (Mr. J. Toynbee, p. 210.)

OPHTHALMIA, *Purulent*—During the acute stage, you may, 1. Deplete locally by leeches. 2. Scarify the inner surface of the lids. 3. Divide the external canthus, or scarify the ocular conjunctiva in radii, if chemosis is high. 4. Apply nitrate of silver drops, the strength varying according to the severity of the symptoms. 5. Foment constantly with decoction of poppies, containing a little alum. 6. After the bowels have been well opened, for which purpose croton oil is the best, as being the most speedy purgative, exhibit mercury, which must be used guardedly if ulceration threaten the cornea. 7. Give quinine when debility prevails. 8. Moderately nutritious diet should be given, and progressively improved. In the convalescent or chronic stage, tonics with varied and mild local astringents and slight counter-irritation must be used to complete the cure. The above is the treatment adopted at Guy's Hospital. (Mr. J. F. France, p. 200.)

Strumous.—Should intolerance of light, deranged digestion, and other symptoms of the appearance of this disease come on in a young child, avoid all depleting measures, and give tonics, as quinine and iron, with fresh air and exercise, simple and nutritious diet. An acute attack is sometimes brought on by crude and indigestible food; the stomach must then be emptied by an emetic, and the action of the bowels and skin be promoted. A leech or two may be applied to the temples. Stimulating eye drops should be avoided in the early stages of these affections, the eyes should rather be steamed or bathed with warm and slightly anodyne

applications. The difficulty experienced in obtaining a good view of the eye from the spasmodic contraction of the orbicularis muscle may be overcome by placing the patient under the influence of chloroform, and by this means nitrate of silver may, if necessary, be applied to the minutest ulcer. Besides bark and quina, the muriate of baryta is an alterative of much power; it may be combined with the tincture of sesquichloride of iron. The syrup of the iodide of iron is also a ferruginous preparation peculiarly suited to this class of diseases. Of local applications, nitrate of silver is the most generally useful; it may be combined with small quantities of wine of opium, or tincture of belladonna, but must not be continued too long, lest it should discolour the cornea. The best remedy for the intolerance of light, is prussic acid; Scheele's preparation reduced to half its strength by the addition of distilled water, or mixed with wine of opium. An excellent counter-irritant in these cases, is tincture of iodine; it should be painted over the upper lid only, as it will be washed off the lower one by the tears. In chronic cases, the child must go out of doors regularly, but in acute cases, confinement to the house is necessary. (Dr. H. Thorp, p. 201.)

Sulphate of Atropia.—This salt is preferable to the pure alkaloid for therapeutical purposes, but the absorption of the solution, if strong (such as five grammes to the ounce of distilled water), must be guarded against. Its application is peculiarly soothing in painful inflammatory states of the eye, the intolerance of light, and abundant lachrymation being much relieved. (Dr. F. Mosler, p. 210.)

MIDWIFERY AND THE DISEASES OF WOMEN.

Artificial Maternal Milk.—The maternal milk differs from the cow's, principally in containing less caseine or curd, and more lactine, or sugar of milk, and from ass's milk in containing a little more curd and butter. Therefore a very perfect substitute for maternal milk may be made by adding about two and a half per cent. of cream to ass's milk, or by removing a portion of curd from cow's milk, and adding a little sugar. (Mr. Lobb, p. 237.)

Fibrous Tumour of the Uterus.—In a case of fibrous tumour of the uterus, very successfully operated on by Mr. Teale, of Leeds, the following was the plan of operation:—The long midwifery forceps were first applied to the tumour, which was gradually drawn fairly beyond the external parts, bringing along with it the inverted womb. An incision was now made through the investing membrane round the basal portion of the tumour, and the mass detached by enucleation. The womb was then reduced by the hand. (Mr. T. P. Teale, p. 245.)

It is impossible to give rules for all cases which may occur, the first incisions must be very free, the tumour being well depressed into the pelvis by an assistant. Next, the separation of the tumour from its capsule must be effected by means of the finger, or by blunt-pointed curved scissors, the finger being used as a director. The grand object for the operator, after having separated the tumour from its cyst wall, sufficiently to allow of its lower part being seized, is to invert the uterus, and drag that viscus, together with the tumour, to the external parts, that its remaining attachments may be cautiously separated. This having been accomplished, and the everted uterus returned, a sponge plug may be introduced, and a full dose of opium given. Small doses of turpentine are of much use in that form of low inflammation of the pelvic organs or peritoneum which not unfrequently follows. (Mr. J. Hutchinson, p. 241.)

Ovariotomy.—A large incision is much preferable to a small one. A small incision does not afford sufficient space for ascertaining the extent and relations of the adhesions of the tumour, nor for the necessary manipulations. Though a mobile tumour is preferable for operating, yet the presence of adhesions is not of much importance. If well organized, the adhesion must be left on the peritoneum and the free portion of the sac cut away around it. In ordinary cases the pedicle of the tumour may be secured with a single ligature, but if it be thicker than the finger, it is necessary to transfix it with a double one, and the ends of the ligature must always be left depending from the lower extremity of the wound. Opium plays the chief part in the after-treatment, the principal indication being to keep the bowels locked up for three or four days. Chloroform is of the greatest use, and has no subsequent bad effects. The tumour should be tapped three or four

days before operating. Dr. Clay has now operated on seventy-nine cases of ovarian tumour, fifty-five of which have been successful. (Dr. Clay, p. 240.)

Placenta Prævia.—In those terrible cases where the os is rigid and unyielding, and the flooding profuse, do not delay, but introduce one or two fingers through the os, and detach all that part of the placenta which adheres within the cervical zone, or region of dangerous placental seat. The contraction of the womb present in such a case as this is the very element which will secure the success of this operation, as it constricts the mouths of the bleeding vessels. If contraction is not present, it must be induced by ergot of rye or galvanism. By the performance of this operation, moreover, the os and cervix are released from a mechanical impediment to dilatation. If necessary, the hæmostatic process may also be assisted by the use of the plug. By these means the hemorrhage will have been arrested in the great majority of cases, but, if not, time will have been gained, and forced delivery rendered more easy. (Dr. R. Barnes, p. 221.)

Prolapsus Uteri.—Having made the usual horse-shoe denudation in the operation for the cure of this disease, Mr. Fergusson applies the common interrupted suture instead of the quill suture, which is generally used. Mr. Fergusson believes that the quill suture sometimes causes tendency to sloughing from over-pressure. (Prof. Fergusson, p. 238)

Puerperal Fever.—In this disease Dr. Copeland says,—"There is no remedy so efficacious as a decided and judicious use of spirits of turpentine." The same author also recommends camphor in doses of from eight to sixteen grains; but by far the most important question is the prophylaxis of this disease. All bad or imperfect drainage must be avoided, and no medical man should attend a case of midwifery after making a post-examination without first washing his hands, and especially his nails, in a solution of chlorine. We must recollect that the inflammation is owing to a poison, and our treatment must be directed rather to destroy or remove this poison, than to combat the inflammation. (Dr. E. W. Murphy, p. 232.)

Suppression of Milk.—If from any cause the lacteal secretion should become suppressed, and it is desirable to again renew it, it may be accomplished by the application of electricity. (M. Becquerel, p. 236.)

Uterine Polypi.—For the removal of these tumours an instrument lately invented by Dr. Aveling, of Sheffield, will be found very useful. It consists of a long curved stem, at one end of which is a hook, and fitting into the concavity of this is a plate of metal, which by a screw in the handle is capable of being withdrawn lower down the stem. When used the plate is screwed half way down the stem, and the instrument is passed up so that the hook may be round the peduncle of the tumour: by means of the screw the plate of metal is now forced up into the concavity of the hook. Thus the tumour is removed, without the disadvantages of either the knife or the ligature; viz. of the former, hemorrhage, which is here avoided, as the peduncle is not divided by a cutting but by a *crushing* action, and of the latter, the fetid discharge caused by the putrefaction of the polypus. (Dr. J. H. Aveling, p. 246.)

There is no class of tumours in which the écraseur is likely to prove more valuable than in these. The dangers resulting from the other modes of removal are avoided, viz. inflammation of the veins, secondary abscesses, &c., if the ligature be used, and hemorrhage if the more speedy knife be employed. The great and only objection to the écraseur in these cases is the difficulty of applying the chain high enough up, so as to include the base of the tumour: this is in a great measure overcome by seizing the polypus with a hook and dragging it lower down. (Mr. G. M. Humphry, p. 247.)

Varicose Veins, *Ligature of in Pregnancy*.—It has been shown by the results of a case of Mr. Erichsen's at University College Hospital that *even* during pregnancy (should such a procedure be necessary from dangerous hemorrhage) varicose veins may be safely ligatured. Mr. Erichsen's method, it will be recollected, consists of placing pins under the veins, and tying them over a piece of gum elastic bougie. (Mr. Erichsen, p. 169.)

Vesico-Vaginal Fistula.—When ligatures are used in operations for this disease, penetration by them of the *vesical* mucous membrane must be carefully avoided. (Dr. J. H. Sawyer, p. 239.)

MISCELLANEA.

Ammonia.—Dr. Richardson's recent discovery, that healthy blood owes its fluidity to the presence of ammonia, which is given off during coagulation, and which process may be arrested and the fibrine redissolved by the restoration of the alkali, suggests the utility of ammonia in all diseases accompanied by or depending on effusion of fibrine, as croup, diphtheritis, erysipelas. Thus ammonia has two actions—primary stimulant, secondary debilitant. Its stimulant powers in hysteria, ague, syncope, poisoning by hydrocyanic acid, are too well known to need mentioning. Of all the salts of ammonia, the hydrochlorate is the most useful when its antifibrinous property is required. (Dr. T. Ogier Ward, p. 273.)

Bran Bread.—In very hot weather it is better to make this extremely useful article of food for diabetic patients without the soda and acid, and in four or five cakes rather than one loaf. (Mr. Camplin.) [An account of it will be found at p. 303 of our last volume.]

Chlorodyne.—This agent given internally in doses of about twelve minims in a little water is a most pleasing anodyne. Its effects last for several days. It is particularly useful where opium cannot be tolerated. (Dr. Henderson, p. 299.)

Chloroform.—*State of the Pulse.*—The finger of the practitioner should be kept constantly on the pulse from the moment when inhalation begins, and from this alone can the amount and duration of anæsthesia be regulated with perfect safety to the patient. Should spasm or rigidity of the muscles prevent the pulse being distinctly felt, the inhalation must be instantly stopped, until the spasms subside. Should the pulse become irregular or intermitting, which, however, is very rare, inhalation should be suspended. The volume of the pulse is no value as a guide; unless the pulse falls very much in quickness its volume is seldom much affected. The velocity of the pulse is lessened by chloroform, especially if long continued, and in large quantities. Double caution is necessary where much blood is lost during an operation: here also the pulse is the sole and unerring guide. (Dr. R. Dyce, p. 297.)

Cod-liver Oil.—The disagreeable taste of this oil may be masked by adding to it about 10 per cent. of common salt. (M. Leperdriel, p. 291.)

Dental Surgery.—*The Electric Cautery* is a very safe, rapid, and effectual means of destroying the exposed pulps of decayed teeth. The construction of the cauteriser, and its mode of application, will be found described at p. 292. The cavity of the tooth having being well dried out and cleaned, and the mouth protected by a soft napkin, the platinum point is introduced into the cavity of the tooth, and then heated, which is preferable to heating it before introduction. The part is distinctly illuminated, and the pulp may be destroyed almost instantaneously. In the great majority of instances there is little or no pain beyond a momentary twinge. As a rule, the tooth should not be stopped on the same day as the electric cautery has been employed, but the cavity should be filled with a combination of morphine and mastic for a day or two. If the tooth should remain tender after the use of the cautery, it is better to wait till this has entirely subsided. (Mr. T. H. Harding, p. 291.)

Exposed and Diseased Dental Pulp.—The nerve may be either removed by means of some instrument to withdraw it, as a straightened fishhook, or by destroying it entirely, or by rendering its exposed surface insensible: for the latter purpose a strong spirit solution of tannin may be applied, and the nerve becomes coated and protected by an insoluble compound formed by the albumen and tannin. As an escharotic for these purposes, nothing is better than four or five grains of recently burned quick-lime mixed with a grain of morphia; this should be taken upon a piece of wool, and placed on the pulp, and the cavity closed with wax. Next day the application may be removed, and if any tenderness remains the dressing may be applied again. A strong saturated solution of camphor is a good anodyne application. The actual cautery may often be used with great success to instantly destroy the dental pulp, as employed by Mr. Harding, whose paper on the subject will be found in this volume. (Mr. Underwood, p. 295.)

Ecraseur.—In Paris, many surgeons in using the écraseur substitute a soft cord of strong hemp, instead of the chain, as it is believed to cut with less contu-

sion; and an instrument with a screw is said to be preferable to one with a lever handle (p. 290).

Electricity by Induction.—In tic douloureux, irritable breast, and sciatica, the most wonderful results have been obtained by the local use of electricity, and by these means the entire removal of muscular rheumatism may be fairly reckoned upon, even in protracted cases, and when all other means have failed. The tympanum has been electrified with success in nervous deafness; and in loss of smell or taste, the Schneiderian membrane, or the tongue and palate, may frequently with success be subjected to the same process. In cases of involuntary stools and prolapsus ani, electricity may be applied to the rectum; or in paralysis of the bladder to that viscus itself. In cases of paralysis of the muscles of the pharynx, or aphonia, the pharynx or larynx may be electrified; and in cases of asphyxia from any cause, the electric excitation of the diaphragm may easily be effected by acting on the phrenic nerve as it passes over the scalenus anticus. By this means artificial respiration may be maintained in a body even some time after death, the air rushing into the lungs with considerable noise. The modes of applying the electrical influence to each of these parts are given in detail in the article. (Dr. J. Althaus, p. 248.)

Friction.—Friction is applicable and of use in cases of local scrofulous disease, but only before symptoms of suppuration appear. It is also of much use in the subsidence of inflammatory action, and here the earlier it is resorted to the better, a good example being after inflammation of joints; in fact, whenever the circulation is languid friction is of use. (Dr. J. W. F. Blundell, p. 258.)

Lead Poisoning.—Persons who work much in lead, should use the bath daily, or if this be not obtainable, they should wash thoroughly the whole of the upper part of the body. The addition of about four ounces of sulphide of potassium to thirty gallons of water much increases the efficiency of the warm bath, causing a formation of sulphuret of lead. The habitual costiveness must be overcome by attention to diet, by the frequent use of injections, and by the administration of doses of sulphate of magnesia in infusion of roses. Iodide of potassium exerts a most powerful influence on the poison of lead; it should be taken fasting, that it may not be decomposed by acids, and it should be largely diluted. There is no evidence to show that sulphuric acid is an antidote to slow lead poisoning. The best means of purifying water from the contamination of lead, is by filtering it through sand and animal charcoal. (Dr. J. C. Hall, p. 56.)

Drop-Wrist from Lead-poisoning.—A case lately occurred at Charing-cross Hospital, of a printer who had been the subject of this affection for only two days, resulting from absorption of lead, owing to the tips of the fingers being denuded by constantly handling new type. This case was cured completely in a week by the patient sitting with his hand in a solution of sulphuret of potassium (℥ i. to ℥ x.) for three hours three times a day. This acted from the great chemical affinities of sulphur and lead. (Dr. Hyde Salter, p. 46.)

Lead-Wire Suture.—In cases where it is desirable to place a suture to any part not easily reached, take a curved needle, and a piece of lead-wire which is very soft and flexible—the end of the needle must be so made that the wire may be screwed into it. Pass the needle through the edges of the wound, cut off the needle, and with a pair of forceps twist the two ends of the wire together, and double up the ends to prevent scratching. (Mr. Spencer Wells, p. 273.)

New Needle with Opening Eye.—To obviate the difficulty of holding the thread with the forceps and withdrawing the needle during the application of the quilled suture, used a curved needle, one side of the eye of which will open to allow of its ready removal from the ligature. This possesses all the advantages of the open eye needle without any of its disadvantages. (Mr. Spencer Wells, p. 286.)

Permanganate of Potash.—This substance in solution possesses the property of removing all noxious and fœtid odours, and in the solid form it possesses caustic properties. It may be used as a lotion, twenty grains to the pint, to ulcerated cancerous tumours, when it removes the fœtid odour and causes the place to assume a much more healthy character. In the solid form, it may be used to destroy cancerous masses. If a little of it, mixed with water, and spread over a plate, be placed in a sick chamber, all offensive odour will disappear. (Dr. G. F. Girdwood, p. 261.)

PYROPHOSPHATE OF IRON.—There is no tonic which acts so promptly and favourably as the pyrophosphate of iron and soda, prepared in a liquid form: it is easy to administer, rapidly absorbed, and does not produce fatigue to the digestive organs. (MM. Follet and Baume, p. 254.)

STRYCHNINE.—*Detection of.*—Messrs. Rodgers and Girdwood, from a carefully conducted series of experiments, have come to the following conclusions:—that strychnine can be detected even when it has not been given in excess; that it is not decomposed in the body; that it is found unchanged in the urine; and can be detected in the blood, organs, and tissues of the body, quite independently of the contents of the stomach. It is more easily detected than any other poison, from the delicacy of its reactions, and from its extraordinary stable qualities. The mode of conducting the analysis will be found at p. 282.

In a case of strychnia poisoning which occurred lately at Newport, it was incontestably proved that the strychnia may, or may not, be found remaining in the stomach, according to the dose, &c., (in this case three grains); but not a particle of the poison in an absolute state may be found in other parts of the body, though the patient live five or six hours after its ingestion. (Prof. Taylor, p. 281.)

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OF

THE RETROSPECT OF PRACTICAL MEDICINE.

POINTING OUT

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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON LOW FEVER.

By Dr. THOMAS KING CHAMBERS, Lecturer on the Practice of Medicine at St. Mary's School, and Physician to the Hospital.

[Dr. Chambers, after giving several cases, describes his treatment. He says]

The previous cases I treated on the principle almost universally approved by rational practitioners, of prescribing for the individual and not for the disease. I mean that the poisoned system has a certain circular course to run, whose tendency is to end in health; and that it is the practice (and a good practice too) simply to expect or watch for this course, to support the body under it, and to apply to the prominent phenomena treatment special to each case. Most certainly this *methodus medendi* is absolute; nothing can take its place. But if we can *add* to it some mode of combating the disease as well, some mode by which the course may be shortened or made safer, or the poison deprived of some of its virulence, we are wise to use it. Just as in a case of ague, while you were improving the alvine secretions, or managing some thoracic complication, you would not omit to cinchonize the malarious infection; or, as in a case of scabies, while you gave the patient a bath to clean him and ease his misery, you would also kill the cause of his misery with sulphur; or, as in a case of rheumatic pericarditis, while you are putting leeches on the chest, you do not forget to try and counteract the rheumatism by large doses of alkalies; so would it, in the disease under consideration, be extremely desirable to have some treatment directly applicable in every case—directly applicable to the typhus because it was typhus, just as bark is to ague, sulphur to itch, or alkalies to rheumatic fever. Aiming at such a desideratum, I have to these last twelve consecutive patients applied one similar treatment, suggested by the practice of Dr. Mackenzie, and by the results of which I have been so favourably impressed, that I shall continue to use it in every instance of low fever till further notice.

The plan is, first to sponge over once or twice a day the whole body with tepid water, and then to anoint it with sweet oil; secondly, to administer large doses of muriatic acid. In mild cases, the acid may be mixed with the ordinary fever beverage (half an ounce to a jug of barley-water), and the patient be allowed to drink at discretion. But in hospitals we do not get mild cases, and they are too ill generally to take anything not absolutely given them, so I usually order twenty minims in sugar and water every one or two hours.

This treatment seems strictly rational. The management of the skin enables that organ to resume its duties of arterializing the blood, circulating it through the capillaries, and evacuating the sweat. Then as to the use of acids, that, too, is justifiable to the physiologist. What blood, when analysed, comes nearest in its altered proportions to the blood in low fever? Is it not that in scurvy and purpura? There is the same excess of black blood-discs, the same deficiency of neutral salts and organizable lymph. Everybody treats these chronic affections with acids, and why not also an acute affection, which corresponds with them in one point at any rate? As to the particular acids employed, muriatic certainly deserves to be tried before others—first, because it is such a large constituent of the body that it might almost be called a food instead of a medicine; and secondly, because it is such a powerful arrester of the decomposition of animal matters. Pour it into a sewer, and you destroy the miasma. May it not also in the body stop that miasma from poisoning the tissues?

Whatever the explanation may be, I continue to employ the treatment, because in these dozen cases it has been so remarkably successful. I do not mean merely that they have all got well, but also that improvement of some kind or another, immediately followed the commencement of the medicine, and was often attributed to it by the patient. Neither have I yet found any obstacle to its use, nor that it has stood in the way of any other remedy which might appear to be wanted, such as leeches, mercury, wine, bark, or food of any kind. When it begins to fail in my hands, I shall let you know.—*Lancet, Jan.* 30, 1858, *p.* 109.

2.—TYPHOID FEVER TREATED WITH ALCOHOLIC STIMULANTS.

Under the care of Dr. Todd, King's College Hospital.

Numerous cases of typhoid fever have been lately in this Hospital, under Dr. Todd's care, which have been treated on an uniform plan, as they all exhibited the same features, and presented the same indications. This treatment consisted in the regular administration of stimulants in small quantities and at short intervals. The success of the treatment has been striking, as, out of a considerable number of cases (estimated by Dr. Whitford, the resident house-physician, at about twenty), only two deaths have occurred, both of them very bad cases, and one evidently hopeless. Detailed notes of these cases would not, perhaps, possess sufficient variety to compensate for their length; but we subjoin short notices of two cases, with which Dr. Whitford has been kind enough to supply us, as examples of the progress and treatment of the disease. It will be seen from this that the latter is of the typhoid character; that the strain is, as usual, on the intestines; and that the characteristic indication for treatment is derived from the pulse. It will also be observed how remarkably the rapidity of the pulse diminishes (its volume and tone generally improving) as the stimulant is taken and tolerated.

It is probable that the experience of our country associates is principally of a different and more "sthenic" type of fever: but we believe that in London this typhoid epidemic is nearly universal; and the treatment employed aims, in most cases, at fulfilling the same indications, though perhaps vinous stimulants are usually less liberally used. We shall probably recur to this interesting and important subject.

Case 1. Sarah M., aged 4, was admitted on November 14th. She was first taken ill on November 11th, with irritability, hot and dry skin, constipation, and abdominal tenderness. On admission, she was quite sensible; the skin was hot and dry; a few rose-spots were seen on the abdomen; the bowels were relaxed, and the motions very offensive. There was much tenderness on pressure over the right iliac fossa.

Date.	Pulse.	Stimulants.
Nov. 14 ...	130 ...	Wine ℥ii., every two hours=3 oz.
,, 15 ...	140 ...	,, ,,
,, 16 ...	140 ...	Brandy ℥ii., every hour=6 oz.
,, 18 ...	120 ...	,, ,,
,, 19 ...	120 ...	,, ,,
,, 20 ...	120 ...	,, ,,
,, 21 ...	120 ...	,, ,,
,, 23 ...	92 ...	Brandy ℥ii., every two hours=3 oz.
,, 25 ...	112 ...	,, ,,
,, 27 ...	96 ...	,, ,,
,, 30 ...	96 ...	,, ,,

Turpentine stupes were applied to the abdomen: these relieved the tenderness, but did not stop the purging. On November 18th, a starch enema, with five mimims of laudanum, was ordered. This stopped the purging, which did not recur after the 19th. From this time she steadily improved.

Case 2. Honora H., aged 17, was admitted November 28th. The fever commenced on November 21st, with head ache and rigors, and then pain in the abdomen. The bowels were much as usual when admitted. She had complete stupor; *the countenance* was dusky; the tongue was coated with brown fur. A few rose-

spots were seen on the abdomen, which was rather tender on pressure. She was ordered, on admission, an ounce and a half of brandy every hour, and the following mixture:—

℞. Spiritûs ætheris chlor. ℥ x.; ammoniæ carb. gr. iv.; mist. acaciæ ℥ iss. M. Fiat haustus 4tâ quâque horâ sumendus.

We append a short table of her daily progress, with the variations of pulse and respiration noted. It will be seen how the former gradually improved under the influence of the stimulant (which was regularly persisted in), and how a very severe and threatening attack issued in a complete and rapid recovery.

Date.	Pulse.	Respiration.	Remarks.
Nov. 28	104	...	...
„ 29	128	24	...
„ 30	104	20	Answers questions.
Dec. 1	88	24	Spots faded. Countenance less dusky.
„ 2	72	24	Less abdominal tenderness.
„ 4	72	...	Bowels regular. No abdominal tenderness.
„ 7	...	...	Convalescent.

—*Brit. Med. Journal, Dec.* 26, 1857. *p.* 1059.

3.—*Quinine in Typhoid Fever.* The case was under Dr. Fuller, at St. George's Hospital.—The patient was a little boy, eight years old, who was admitted with well-marked symptoms, but whose previous history was imperfect. He had a very distinct mulberry rash over his body. Ten grains of quinine were ordered the first day every two hours, and the change produced in the general symptoms was positively striking: the pulse came down, his skin was cool and moist, a diarrhœa ceased, and his tongue was moist. As this was the case, Dr. Fuller did not desire to push the large doses (he had taken three only), but continued the medicine in two-grain doses three times a day, with four ounces of wine, and the little fellow is going on well. This is the third case in which this plan of treatment has proved successful in Dr. Fuller's hands; it has been employed elsewhere with great benefit.—*Lancet, Jan.* 23, 1858, *p.* 89.

4.—ON PERIODIC AND ERUPTIVE FEVERS—THEIR NATURE AND PREVENTION.

By Dr. Frederic James Brown, Chatham.

[Speaking of the nature of periodic fevers and of typhoid and typhus fevers, the author offers the following speculative considerations in the form of propositions:—]

First proposition. That enlargement of the spleen precedes or follows the first attack.

The researches of Surgeon Dempster and Major (now Colonel) Baker, in India, show conclusively that splenic enlargement is a direct effect of malarious influence. These researches establish the fact that a large percentage of the inhabitants of malarious districts present an anatomical element of disease; namely, enlargement of the spleen.

Second proposition. That no poisonous matter is introduced into the blood.

I find periodic fevers arising in damp situations where there is no decaying animal or vegetable matter, therefore I cannot but accept the conclusion that periodic fevers are produced by some other cause than gaseous emanations or poisonous matter in the fluid or solid form, from decaying organic matter. I fully admit that fœtid gases produce an injurious effect upon the human organism; but this question is distinct from the subject under consideration.

The sequence of occurrences in periodic fevers is utterly opposed to our ideas of disease produced by a blood-poison. Take those affections in which a virus is introduced into the blood, such as syphilis and hydrophobia, and compare them

with ague. It is true that syphilis presents many remarkable progressions and retrogressions in its course; but the cutaneous eruption, the contagious nature of the disease, and its capability of being propagated by inoculation, and other circumstances, mark a wide separation between this disease, the effect of a blood-poison, and ague, a disease caused by diminished nerve-force. The phenomena witnessed in periodic fevers are wholly different from those seen in diseases that clearly arise from the introduction of animal poison into the blood. With respect to diseases produced by vegetable poisons, I am not aware of the existence of any such. We are acquainted with diseases caused by mineral poisons; but poisons from the vegetable kingdom kill rapidly without inducing a train of symptoms that endure beyond a few days. In other words, the vegetable poisons produce acute toxæmia, whilst the animal and mineral poisons give rise to acute, subacute, or chronic toxæmia.

Another argument in opposition to the idea that periodic fevers are due to blood-poisons, is as follows:—A man may contract ague in Essex, may go to Edinburgh (where there is no endemic malarious disease), may remain free from ague for a year or more, and be affected by the disease on the occurrence of a cold wet day in spring. This is a series of occurrences never observed in any disease that is proved to be due to virus.

Third proposition. That damp earth is necessary to the production of periodic fevers.

Damp must be in connexion with soil for the production of these fevers. The damp decks of a ship will not originate this form of fever, although a recurrence of fever may take place from this cause. It may be objected to this proposition, that the bogs of Ireland have no influence in producing ague. It is true that the Irish bogs do constitute a remarkable exception. I put forth the hypothesis that the peat acts as a nervine tonic, and so enables the individuals residing on the damp land to bear the loss of an abnormal amount of electricity with impunity.

Fourth proposition. That periodic fevers are due to telluric causes, viz. the abstraction of positive electricity from the human body by induction, in abnormal quantity, through the agency of damp earth.

The fact is well ascertained that positive electricity is removed in abnormal quantity under the circumstances just enunciated. The order of sequences I give hypothetically. Abstraction of positive electricity in undue proportion; disordered function of the sympathetic nervous system; changes in the constitution of the blood, viz. first, hyperinosis; finally, leukæmia; changes in the condition of the spleen and liver.

It may be objected to this proposition, that the lower animals grazing on damp land should experience the same ill effects as man.

I attribute the immunity of the lower animals to the natural clothing of hair and wool that they possess, which preserves the equable temperature of their bodies and acts as a non-conductor of electricity. It is certainly an extraordinary circumstance that the lower animals should enjoy immunity from periodic fevers, but it is a fact. It is equally certain that the drainage of marshes and the diminution of cases of ague in a malarious district bear a direct ratio to one another. Hippocrates banished periodic fevers from the city of Abydos by causing the marshes in its vicinity to be drained; and I believe that London might be similarly freed from malarious diseases. In my opinion, convict labour might be beneficially employed in the drainage of the marshes bordering the Thames and the Medway. In this way, men that offend a civilized community might make reparation for their faults. Dr. Handfield Jones has drawn up a list of about a score of diseases allied to ague, such as neuralgia, certain forms of rheumatism, neurosis of the nervus vagus and solar plexus. All these diseases will disappear when we bring the *will* to bear upon them. The people have the *power;* they only want the *knowledge* and the *will*. It is for us to supply the knowledge and to stimulate the will.

I have next to inquire into the nature of typhoid and typhus fevers. I will premise by a few remarks on pyrexia in its most extended signification. Pyrexia consists in an augmented temperature of the skin, due to an augmented cremation *of* the tissues of the body. The increased temperature of the skin can be measured by the thermometer, and it is found even during the stage of rigors. Pyrexia

attendant upon inflammation I believe to be due to changes in the condition of the sympathetic nervous system, and to changes in the constitution of the blood, and to alteration in the condition of the tissues. Catarrhal and biliary pyrexia I attribute to similar changes, arising from arrested or altered secretions. Typhoid fever I believe to be caused by the application to the alimentary canal of the excreta of the intestines that have undergone alterations outside of the body. The sequence of occurrences is as follows:—Fæcal matters (altered in their nature) are swallowed in water in almost all towns, and even in lone houses in the country, in consequence of the proximity of wells to privies and drains; blood-poisoning and disordered sympathetic nerve-force result: the skin and the glands of the small intestine become affected: and the disease known as typhoid fever is produced, having a duration of from fourteen to twenty-eight days. Typhoid is essentially a privy-soil fever, but night-soil can give rise to other diseases beside typhoid fever, viz. cholera, diarrhœa, and dysentery.

I now proceed to consider the nature of typhus fever. I believe that typhus is produced by the respiring of air charged with a larger per centage than usual of animal extractive matter present in the expired air. The excretory matter from the lungs and skin, when respired in a concentrated state, as occurs in overcrowded apartments, gives rise to typhus fever, which has a duration of fourteen days, and which expends its force on the lungs and cerebro-spinal system. Typhus is thus an ochletic disease, or, in other words, a disease caused by over-crowding, and is essentially distinct from typhoid fever.

An interesting experiment was performed, a short time since, on the continent. An animal extractive matter was obtained from the respiratory and cutaneous excreta of numerous individuals congregated in one apartment. This extractive matter was injected into the blood of a dog. The animal died of low fever in fourteen days.

Now, it will be observed that fourteen days constitute the full period of typhus fever. If this experiment shall be repeated many times with the same result, I shall deem the matter to be demonstrated.

That overcrowding is the cause of typhus fever, is further shown by the occurrence of this form of fever in jails, barracks, and the habitations of the poor in large cities. Civic populations usually suffer from both typhoid and typhus fever, because of the contamination of the water and the overcrowding of the inhabitants; but in towns occupying much space in proportion to population typhus bears a small ratio to typhoid fever. This is the case with Rochester and Chatham, as I showed in a paper read at the Epidemiological Society in April, 1855.

In the third part of this paper, I beg leave to point out the measures necessary for the prevention of the fevers that we have been considering. Marshes must be drained; but until this can be effected the inhabitants of paludal districts should take a daily dose of quinine, and should wear flannel clothing and a non-conducting material within their boots. The conversion of marshes into bogs might prevent ague (could it be effected by the cultivation of the plants found on bogs or by other means), but it would not meet with the approval of agriculturists and graziers; therefore drainage is the only practicable mode for the conversion of marshes into salubrious ground. Then as to the prevention of typhoid fever; this can only be obtained by a pure water supply from a source distant from towns, and by effective sewerage. The prevention of typhus would be certain if abundant space were included within the area of towns, together with an improved construction of houses and free ventilation. Our public buildings, such as hospitals and union houses, should be built after the model of the hospital at Bordeaux and that lately in use at Renkioi. Ancient Rome suffered from periodic fevers, because of the proximity of the Pontine marshes; and she probably suffered from typhus in consequence of the enormous population within her walls; but I should imagine that she was free from typhoid fever because of the purity of the water supplied by her magnificent aqueduct, and the effective sewerage that was employed.

Before concluding this paper, I wish to remark that bad smells will not produce typhoid fever, under ordinary circumstances, although they cause nausea and depress the general powers of life. But now and then it occurs that the opening

of privies long closed is directly followed by typhoid fever of a malignant type. Such an instance occurred in Rochester several years since. I believe that in these instances the fæcal matters (altered in quality) are actually swallowed with the saliva,—minute particles impinging on the pharynx, and being thus conveyed to the lining membrane of the alimentary canal.—*British Medical Journal, Feb.* 27, 1858, *p.* 165.

5.—*Acute Articular Rheumatism.*—Dr. Hauschka recommends, as the best means of abbreviating the duration of acute articular rheumatism, the administration of large doses of iodide of potassium in conjunction with morphia. He gives in the course of the day from 15 grains to 4 scruples of the iodide, with from ½ to 1 grain of morphia. He never has recourse to local treatment when the rheumatism is polyarticular.—*Rév. Méd. Oct. p.* 439.—*Med. Times and Gazette, Nov.* 14, 1857, *p.* 511.

6.—*Treatment of Acute Rheumatism.*—Dr. Gordon states that after trying the various remedies for this disease, he finds the following treatment that which is best adapted for preventing its passing into a lingering state:—"After having procured free evacuation by means of senna and salts, I begin the administration of equal parts of vin. colch. and spts. tereb. in doses of 10 drops every two or three hours. After a day or two, I give in connexion with these (only at different intervals, say of five hours each), tr. ferri chlor. 10 drops, using as much opium as may be necessary to quiet pain. I also allow a free use of infusion of coffee, of average strength. If the patient's appetite remain I allow a moderate use of his usual food at the customary intervals."—*Boston Journal.—Medical Times and Gazette, Jan.* 9, 1858, *p.* 44.

7.—ON THE NATURE AND TREATMENT OF CANCER.

By G. Southam, Esq., Surgeon to the Manchester Royal Infirmary.

The conditions essential to the production of cancer, are partly constitutional and partly local; the constitutional leading to the development of the cancerous element in the blood, by interference with the functions which preserve this fluid in its healthy state; the local separating the morbid material thus produced, and transforming it into cancerous deposit, which replaces, or becomes incorporated with, the proper textures of the part. Neither of these conditions *alone* can develope the disease. A blow or injury cannot of itself produce it; nor can perverted nutrition of a part from any other cause, unless the cancerous element exists in the system. But when this element is in excess, it is sufficient of itself to cause the local affection; as, for instance, in disseminated cancer: indeed, from the course this variety takes, it would appear that injury is not so frequently the exciting cause as is generally supposed, the disease not necessarily following injuries in persons so affected.

As regards the tissues which may be affected by cancer, it is obvious that it may be deposited wherever nutrition is in progress; and, consequently, no organized texture is exempt from its ravages.

It is now generally acknowledged that its earliest condition is that of a blastema or fluid, which Virchow (*Archiv*, B. 1, viii.) and Vogel (*Path. Anat.* p. 565) describe as consisting of a firm, compact, amorphous substance, similar to coagulated fibrine, sometimes containing molecular granules of modified protein or fat—characters not materially differing from the blastema of the natural tissues and other formations. In this blastema, cells are developed, supposed by Lebert, Robin, Hanover, Paget, Druitt, and others, to be of a specific nature. Frequently, no doubt, they present appearances which differ from those of the healthy tissues; the cell-wall and its nuclei, nucleoli, and granules, being usually larger. They are also more varied in form, in some cases being round or oval, in others caudate or elongated. The cell-wall is extremely thin and pale, and, when submitted to the action of dilute acetic acid, is so transparent as to display the nucleus and its *nucleoli distinctly.* In the blastema, granules are also found, as well as numerous

nuclei and nucleoli, destitute of any distinct cell-wall. The cells are said to be endowed with amazing reproductive powers, each being supposed to produce, either by fissure or from its nuclei, a second; the granules which the cells and blastema contain also becoming nucleoli, and ultimately parent cells. A fibrous tissue or stroma may also be developed from the blastema, in some cases forming the principal portion of the deposit. It is as yet undetermined whether this stroma is formed directly from the blastema or from the cells; possibly the latter is the transition stage. Nor does it present any peculiarities by which it can be distinguished from condensed or indurated areolar tissue of other parts, except, perhaps, in the arrangement of its filaments; consequently, it is supposed by some not to be a new formation. But it is difficult to comprehend how it should constitute the chief portion of some varieties of cancer (scirrhus), without regarding it in this light: indeed, it would seem to indicate that the cell is still capable of undergoing further development—a view which is confirmed by this form of deposit being usually characteristic of malignant tumours of slow growth; whilst the cellular variety is peculiar to those of rapid formation, probably from the developmental power being destroyed, in consequence of the blood being more highly impregnated with the disease.

As regards the speciality of the cancer-cell, it is questionable how far this can be admitted. Compare it with the transitional epithelia of the different membranes of the body, or many of the gland-cells, or with the fibro-plastic cells of some innocent tumours; and there will appear numerous instances of similarity, as will prove this mode of diagnosticating malignant growths to be most unsatisfactory and delusive. Indeed, its most experienced advocates have given numerous proofs of their inability to apply this test to practice. I need only refer to the works of Nélaton (*Clin. Surg.*, Philad. 1855, p. 457), and Velpeau (*loc. cit.* p. 21), to show that tumours, which run their course and terminate in precisely the same way as cancer, have, under the scrutinizing examination of Lebert and Robin, been found destitute of the specific cell; whilst M. Mandl, another experienced histologist, asserts that he has met with the same form of cells in healthy lung. Further, in osteoid and fibrous cancer, there is a general absence of cells, or they are so few in number as often not to be discernible.

There appears, then, no reason to regard the cells found in cancerous growths other than as the ordinary ones formed for the development of healthy tissue, which have taken on an abnormal character, in consequence of the blastema derived from the blood for the nutrition of the part being in a diseased state. Their subsequent development is under some specific influence, which, in cancer, as in other morbid growths of constitutional origin, exerts its effects in various degrees, according to its interference with the vital powers. Thus, the blastema of tubercle may be said to be almost destitute of vitality, and therefore incapable of development; and either generates into imperfect pus, or undergoes some chemical conversion. But cancerous blastema, being more highly organized, may be transformed into caudate or fibro-plastic cells, with their nuclei and granules; and these may merely reproduce others similar to themselves, or they may go beyond this, and manifest themselves as imperfectly formed fibrous tissues—the cancerous stroma. The new formation in either case has, however, only a *temporary existence;* for, after having arrived at a certain degree of perfection, it almost invariably degenerates.

On the other hand, in the absence of these specific influences, as in the ordinary effused lymph of inflammation or of healthy granulations, the cell is endowed with the power of progressive development, passing from the fibro-plastic cell into filamentous tissue, which finally assumes and *retains* all the characters of the healthy elementary structures in which its blastema was originally generated.

But though we can ascribe no special features to the cells found in cancer, the microscope has furnished us with much valuable information respecting the nature of tumours generally. Whilst it has shown that the primary elements of all morbid growths do not materially differ from those of the normal tissues, it has also shown that these constituents vary in the degree of their development, in their mode of arrangement, and in their relative proportion to each other; that, in innocent tumours, the difference is slight, whilst in malignant ones it is more marked; the higher degrees of malignancy being characterized by a general want

tory products, the different structures, instead of presenting a confused arrangement, preserve their natural relation to each other; the epithelial deposit, the scales of which are unchanged by disease, consequently not lying within, but upon, their surface.

I can only very briefly allude to the other kinds of doubtful growths in connexion with that important subject, the degeneration of innocent tumours. It was formerly considered that all innocent growths were extremely prone to become cancerous; but, for some years past, pathologists have taught that, if a growth is malignant, it must have been so from its commencement, and that a perfectly innocent one never becomes cancerous. This view is undoubtedly correct in the *majority* of cases, but instances occasionally occur where it is not verified. Take for example the most simple form of growths.

Sir Astley Cooper's experience led him to infer that a fatty tumour may sometimes take on malignant action. Brodie inclines also to the same opinion, and, in support of it, gives the particulars of a case which came under his own observation ('Lectures on Pathology and Surgery,' 1846, p. 282). Simple cysts may become cancerous, but perhaps less frequently than is generally supposed: for the fungosities which are found in their interior are more frequently the result of inflammatory action than of any constitutional cause. It is in the ovaries they are met with most frequently; and when accompanied by cachectic symptoms, their cancerous nature seems to be confirmed. But the cachexia more probably arises from imperfect nutrition, caused by pressure of the tumour on the surrounding parts, than from any general infection of the system. Cysts, however, do become the seat of cancer; a well marked case of this kind came under my notice three years ago, where a simple cyst, which had existed some years in the mamma, became cancerous as well as the surrounding structures; and there is now amongst the out-patients of the Manchester Infirmary a female under the care of Mr. F. Heath, where a malignant tumour of the face, attended with the usual constitutional symptoms, originated in a simple cyst, which had existed for twenty-eight years. Cartilaginous tumours are well known to contain occasionally cancerous material; and warty growths of the skin are said to be frequently the earliest evidences of epithelial cancer. Several of the fibro-plastic tumours to which I have alluded must also be admitted to be either innocent growths which have subsequently assumed a malignant character, or that pathological data are too imperfect to enable us to distinguish between the two diseases in their earliest stages.

On the other hand, the two varieties of tumours are sometimes found in the same person quite unconnected with each other. Thus, females with fibroid tumours of the uterus are occasionally found to be affected with cancer of the os and cervix. Chronic mammary tumour may occur with cancer of the same part, each disease remaining distinct from the other, of which Mr. Paget has recorded three well marked instances. Warty growths of the skin I have frequently known to have remained quiescent in persons suffering from cancer in their immediate vicinity. Still it must be admitted that innocent tumours may sometimes become cancerous, but not from transformation of their structure, the morbid material being incorporated with it as it is with other tissues of the body. They, however, seem less liable to its ravages than the healthy structures; and the cancerous diathesis, though it may in no way have contributed to their original formation, must be first developed before they can become affected.—*British Medical Journal, Jan.* 2, 1858, *p.* 5.

8.—ON THE ESCHAROTIC TREATMENT OF CANCER.

By James Syme, Esq., Prof. of Clinical Surgery in the University of Edinburgh.

It has long been a settled principle in surgical practice, that malignant tumours or sores should either be allowed to remain free from disturbance or completely removed, since tampering with them by irritating applications is the most certain means of exciting disease in the lymphatic glands or other textures. But the pro*cedure advocated* by the Middlesex surgeons was the most extreme degree of devia*tion from this rule,* since it kept the local disease, together with the patient's sys-

tem, in a perpetual fret for many weeks; so that no one need be surprised at the effects, which, indeed, these gentlemen thus admit:—"Nothing could be more disastrous than this case; and there is no reasonable doubt that the tumultuous increase of the disease was directly owing to the local treatment." If caustic is ever used for destroying malignant textures, it should be, therefore, of such power and so employed as to strike at once to the root of the evil, and I am enabled to suggest efficient means for this purpose.

Mons. Velpeau, speaking of the caustic made by mixing sulphuric acid with saffron, expresses his persuasion that it would be the best of all escharotics except for its expense and the difficulty of confining its action within certain limits. It occurred to me that sawdust would supply the place of saffron, and my assistants at the hospital ingeniously devised the following effectual means of restraining the extent of action. A solution of gutta percha in chloroform is applied to the skin for some distance round the part to be attacked; then a thick piece of the same material, with an aperture cut in it of the requisite size, and softened by exposure to heat, is pressed firmly so as to adhere everywhere to the surface thus prepared; a thin piece is next glued round the edge of the opening, so that, when supported by a stuffing of lint, it may form a wall enclosing the diseased part. Concentrated sulphuric acid, with about an equal weight of sawdust stirred into it, until the mixture assume a homogeneous consistence equal to that of thin porridge, is lastly applied, in quantity proportioned to the extent of thickness concerned. In the first instance, as the pain is acute, opiates or chloroform may be used; but after a short while, so little uneasiness is felt, that the patient can easily allow the caustic to remain for ten or twelve hours, when it will be found that the whole diseased mass, though covered with skin and several inches in depth, has been reduced to a cinder, presenting the appearance of strongly compressed tow. Under poultices, the slough separates in the course of days or weeks, according to its depth, and the sore then heals without any trouble. If, therefore, patients, from an unconquerable dread of cutting, should prefer the escharotic treatment, or if the circumstances, on any other account, should seem to render this method eligible, the procedure just described may be found useful.

In conclusion, I beg to offer the following principles or practical rules for the treatment of cancer.

1. The treatment of cancer may be divided into curative and palliative.
2. The curative treatment should not be undertaken when the local disease is so seated or connected as to prevent its complete removal; when the lymphatic glands are affected; and when the patient's general health is deranged.
3. Removal may be accomplished by means of the knife, escharotics, and ligatures.
4. Of the means, in general the knife is best, and ligatures the worst.
5. Escharotics may be used with most advantage when the disease is superficial.
6. Escharotics, employed with a curative view, should always destroy the whole morbid part by one application.
7. The palliative treatment is generally best accomplished by means of soothing applications and attention to the general health.
8. When the local disease is very troublesome, it may sometimes be relieved for a time by destruction of the morbid growth.
9. The best agent for this purpose, and also with a curative view, is concentrated sulphuric acid properly applied.—*Edinb. Med. Journal, Nov.*, 1857, *p.* 388.

9.—ON THE PAINLESS EXTIRPATION OF CANCEROUS GROWTHS.

By Dr. James Arnott.

[In the combination of long-continued congelation with caustic, we have a means of speedily extirpating cancerous growths, unattended with pain, and producing neither shock, inflammation, nor permanent debility. This mode of treatment has been fully tried in the cancer wards of the Middlesex Hospital, and it is the results of the experience there gained, which are contained in the following paper.]

My first and principal object was to show that cancerous growths may not only

be extirpated by congelation and caustic, without pain, but if not absolutely without danger, with much less danger than accompanies the means usually employed for this purpose. This was satisfactorily fulfilled by the following case, which was watched by the surgical staff and students of the hospital, and seen by several eminent surgeons unconnected with that institution.

On the 28th of November, at noon, Sarah H., No. 1, Laffan Ward, had a circular portion of the right breast, three inches and a-half in diameter, and enclosing a large occult cancerous tumour, congealed for two hours by a frigorific mixture, at a temperature ranging from 8 to 12 degrees below zero Fahr. This mixture, which was frequently renewed, was confined to the part by a cup or broad flat ring of gutta-percha, having a short flexible tube, closed by a stop-cock, issuing from its lower border. Immediately after removing the mixture, nitric acid was applied to the skin, and after the acid, a thin layer of chloride of zinc paste was placed on it, and allowed to remain until the next day. There was no expression of pain made during or after these proceedings, but being questioned on the subject, the patient stated that for about five minutes, while the congelation was being effected, there was a sensation of tingling like that produced by a mustard plaster. The uneasiness from this was not sufficient to interrupt her account of the origin and progress of the disease, which I had requested her to give just as the congealing process commenced. This tingling of short-duration was the only disagreeable feeling experienced during the day. She took her usual dinner while the congelation continued, and slept well during the night. It is proper, however, to relate that previously to the application of the strong frigorific mixture, I had taken pains to benumb the part very gradually; and after its removal, another refrigerating mixture was applied for about eight hours over the chloride of zinc, but kept separate from it by a very thin intervening membrane.

By the middle of next day, a large white slough or eschar had been produced by the combined measures, of exactly the dimensions of the lower opening of the gutta-percha vessel, which (from having been previously heated) had adhered firmly to the breast till midnight. For the purpose of ascertaining the extent of the disorganization, the slough was cut in the presence of the resident medical officers to the depth of an inch without causing the least sensation. No inflammation followed, nor did any redness appear at the margin of the slough till the third day, when its separation had probably commenced. Notwithstanding the continued action of the caustic (which was daily inserted in the manner practised by the French), the patient's general health remained undisturbed until she left the hospital. The lower part of the eschar separated on the 21st December, and when I last saw her at her own residence, on the 7th of January, the cicatrization was nearly complete. As her appetite had remained good during the whole of this period, and she had been able to take exercise in the open air, her strength continued unreduced. There had been no occasion to have recourse to cold again for its anæsthetic effects, and the only medicine taken by her during her stay in the hospital was two laxative pills.

I have not considered it necessary to describe minutely more than the first stage of the treatment; for, as my principal purpose was to show that the dreadful pain produced by caustic can be certainly prevented, while its action is much promoted, and the hazardous use of the knife superseded by a comparatively safe measure, a report restricted to that part of the treatment in which the suffering has always been the most acute and the inflammation greatest, would have been sufficient. Whether it proceeded from the deep and lasting preliminary congelation, or from her not having been rendered morbidly sensitive by the very severe suffering that has usually ushered in the treatment by caustic, the patient hardly felt what could be termed pain during the whole period—except on one occasion, when a little of the chloride of zinc paste spread from the slough to the adjoining sound skin.

The absence of all inflammation, excepting that slight degree which is necessary for the separation of the slough, is as remarkable a circumstance in the above case as the absence of pain, and, in respect to danger, is, perhaps, still more important. I have, on several occasions, endeavoured to draw the attention of surgeons to the important fact, that congelation, judiciously employed, often constitutes an unfail*ing preventive* of inflammation; but no evidence of this can be more satisfactory *than a statement recently* made by Dr. V. Pettigrew, and reported in the 'Medi-

cal Times and Gazette' of the 5th of December, 1857. So completely is all injurious or excessive inflammation prevented by intense cold in incised wounds, that of ninety-three operations performed by him under it, and of which ninety were perfectly painless, only one did not heal by the first intention when this was desired.

Questions of considerable importance as respects the removal of growths by congelation and caustic are, whether one slough should be allowed to separate by the natural process before another is formed; whether a fresh slough should be made under a previous one; or, finally, whether the sloughs produced should be removed by some mechanical or chemical means, in order to give these combined measures ready access to the living parts beneath. Each of these plans may be the most appropriate to certain cases. The first is the most tedious, unless a very powerful and deeply operating combination of these agents be employed, and in that case there is danger of the destruction of texture extending too far. The making of incisions in the slough for the insertion of caustic has been practised for the last fifteen years by M. Girouard, a physician of Chartrés, though it is uncertain whether Canquoin, the celebrated cancer-curer, did not precede him in the use of a similar method. The surgeons of the Hospital at Chartrés sometimes burn holes with cylinders of caustic potash and lime, into which they insert pieces of chloride of zinc paste; and, more lately, caustic has been inserted deep in the flesh, either by previously puncturing the part with a knife (the practice of M. Maisonneuve), or by injecting liquid caustic through a capillary tube.

When perfected the third plan will probably be the best. The slough formed by intense cold could be easily removed by bent scissors, and under congelation, without uneasiness. Still softer, and more easily removable, is the slough produced by alkaline caustics, and the objections to them hitherto may be obviated by using the gutta-percha cup in their application. They are thus prevented from spreading, and any hemorrhage produced by them can be immediately checked by chloride of zinc, or by extreme cold alone. The contrivance of the cup will also enable us to soften or dissolve the harder eschars formed by the mineral acids or metallic salts. I am now engaged in investigating this subject.—*Med. Times and Gaz., Jan.* 23, 1858, *p.* 83.

10.—*Disappearance of Cancer of the Tongue.*—Amongst several cases of cancer of the tongue, which we occasionally noticed at the Cancer Hospital, was one of a man, aged fifty-eight, Louis B——, who became a patient in July last. At that time the organ was much enlarged, of an irregularly mottled colour, with red and purplish discolorations here and there, and superficially ulcerated in two or three places. We watched this man very carefully, to see the effects of the treatment employed; and on the 3rd of November were agreeably surprised to find that a very great improvement had taken place. We at first scarcely recognised him, from the cheerful look which had replaced the former anxiety consequent on his sufferings. The tongue had diminished in size to something like its natural form, and had lost a good deal of the peculiar appearance it had previously presented. He could eat with more comfort, digested his food well, and was gaining flesh and strength. All this has been effected by careful attention to diet and tonic remedies, together with the local application of the powdered sulphate of copper; upon which plan of treatment we have on a previous occasion dwelt. He is now and has lately been using a mild borax lotion, with the occasional use of powdered sulphate of copper. We heard Dr. Marsden say that he thought the man would be well in another three months, a prediction which we fully expect to see realized. This, however, will not be the first case which we have seen leave this hospital, not merely relieved, but with complete healing up of the disease.—*Lancet, Dec.* 12, 1857, p. 602.

11.—*Chlorate of Potash in Scurvy.* [Mr. Corner, the Resident Medical Officer on board the Dreadnought Hospital Ship, always relies upon the chlorate of potash in scurvy.]

It had the effect, he stated, of curing the sponginess of the gums much more rapidly than could be done by any other treatment. He had never given it excepting with lime-juice, &c., at the same time; and the proof he relied on was, that in cases treated without it, and by the latter means only, the gums got well much more slowly. The speedy restoration of a sound state of gums is of course of great importance, since it enables the patient to take food much better. Mr. Corner's fact is one of great importance, since it goes to establish the assertion that the chlorate is curative of all inflammations of the mouth and gums, whatever their cause, syphilitic and cancerous affections alone excepted. It will cure follicular, ulcerative, and phagedænic forms of stomatitis like a charm, and perhaps even true cancrum oris if taken early; in hæmorrhagic purpura, although it has no influence whatever on the disease itself, it will harden the gums and prevent their bleeding; it is a speedy remedy in mercurial ptyalism; and now we may add the spongy gums of scurvy to the list of mouth affections over which its spell has potency.—*Med. Times and Gazette, Nov.* 7, 1857, *p.* 476.

DISEASES OF THE NERVOUS SYSTEM.

12.—ON THE PHENONEMA OF SPINAL IRRITATION, AND OTHER FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM.

By Dr. Thomas Inman, Lecturer on the Practice of Medicine at the Liverpool Royal Infirmary School of Medicine.

The prevailing idea in Dr. Inman's mind on the subject of the painful affections in question is, that they are due to some morbid condition of the muscles rather than of the nerves, and that the so-called spinal disorders originate most commonly in a feeble and painful affection of the muscles of the back. He records numerous cases in which these affections, having been mistaken for symptoms of inflammation, were treated by depletory measures, and rendered worse in consequence, and in which a due amount of rest to the over-strained muscles, with good diet, effected a speedy cure. Passing from the painful affections of muscles in general to those of the spine in particular, Dr. Inman considers that most of the cases of spinal irritation are really owing to causes originating in the muscles, and that they ought to be treated generally by sustaining the health, giving repose to the affected muscles, and assisting their action, when necessary, by well-contrived artificial supports. Dr. Inman, like Dr. Walshe, does not condemn the use of stays as an article of female dress, but considers them as rather beneficial in aiding the action of the muscles in preserving the equilibrium of the spinal column. The reference of such cases to the general phenomena of hysteria is condemned by Dr. Inman as unphilosophical, and the necessary connexion between hysteria and disorders of the uterus is also called in question. Dr. Inman's views of the nature of spinal irritation are summed up in the following recapitulation:—"We believe that the vast majority of the symptoms considered as the result of spinal irritation arise from over-exertion of one or more portions of the muscular system in debilitated subjects. That the spinal tenderness has a similar origin, and that the other symptoms considered as *resulting from* spinal tenderness, are *concomitants only*, and referable to a common cause."—*Med. Times and Gazette, Jan.* 2, 1858, *p.* 17.

13.—ON HEMIPLEGIA DEPENDENT ON ATROPHIC CEREBRAL SOFTENING.

By Dr. R. B. Todd, Physician to King's College Hospital.

[In the case which is the text of this lecture, there is hemiplegia of the right side. Five years previously she had very complete hemiplegic paralysis on the other sipe, from which she completely recovered. The present attack came on suddenly, and was accompanied by insensibility.]

On the admission of this patient there was complete paralysis, as regards voluntary motion, of the muscles of the right side of the body; indeed, it is rare to meet

with a case of hemiplegia more complete than this had been, for no reflex actions could be induced by tickling the sole of the foot, except occasionally, when we succeeded in exciting a slight action in one or two muscles connected with the great toe. The muscles of the paralysed limbs were all perfectly flaccid and relaxed: the mouth was slightly drawn to the left side; the tongue, when protruded, diverged somewhat towards the right side; the patient could see and hear well; the pupils were equal; there was no headache, but as I before mentioned, a systolic bellows-sound was audible over the base of the heart.

Let me impress upon you the importance of observing and noting in your record in all cases of hemiplegia the condition of the muscles of the paralysed limbs. You should always flex the forearm upon the arm, and the leg upon the thigh, and carefully ascertain whether any of the muscles of these parts offer any resistance to these movements, and if they do, you should note the degree of this resistance—whether it be merely a slight resistance, or whether it amount to a state of greater or less rigidity. Sometimes you will find that the biceps is the only muscle which at all opposes your movements, and in other cases it is the triceps alone which resists; while in other cases you will find all the muscles of the limb in a state of intense rigidity. You will readily understand the great importance of attending to these points when I tell you that these different states of the paralysed muscles—flaccidity, slight resistance, or absolute rigidity—are indications of different states of brain. Thus the perfectly flaccid condition of the muscles of the palsied limbs is indicative of a cerebral lesion distinctly atrophic in its nature—a lesion the very opposite of inflammatory, of a low kind, and one in which there is a tendency to waste, and in which the vital powers are *below par*.

The resistive state of the paralysed muscles shows that the cerebral lesion, whatever it be, is of an *irritative* kind. A very frequent cause of this state of muscles is a small apoplectic clot with laceration by the effused blood of some of the healthy brain-substance immediately adjoining it. When the palsied muscles are hard and rigid, and almost in a tetanic condition, the brain lesion is of a more distinctly and decidedly irritative kind than in the last-mentioned class of cases, in which there is merely simple resistance, and is sometimes of an inflammatory nature. These are the cases best adapted for bleeding, or, at all events, for mercury. But when there is merely resistance of the paralysed muscles, and, *à fortiori*, when they are perfectly flaccid, these remedies are inadmissible and generally calculated to do harm.

Here, then, we have in the case before us all the indications of paralysis dependent on an atrophic lesion of the brain—all the characters, in fact, of an ordinary case of a common form of hemiplegia, but a form which is more frequently met with in persons more advanced in life than our patient. I omitted to mention that sensibility was considerably diminished in the paralysed limbs after the attack, and (what is not very common) it has since exhibited no decided tendency towards a speedy return. If you converse with this patient you will perceive that, although she is in a low and depressed state, which is partly perhaps due to the shock of the attack, and partly also to an enfeebled and impaired health prior to the seizure, her intellectual powers are pretty perfect; and I therefore infer that her hemispherical convolutions are not damaged.

The lesion in this patient is *atrophic*, or *white softening*, and its seat is, I believe, some part of the *centre of volition*—that part of the brain which is immediately concerned in voluntary actions, *i.e.* the corpus striatum and optic thalamus on the left side, or parts in immediate connexion with these ganglia.

White softening depends for the most part upon any condition which cuts off from the brain, or from a part of the brain, the normal supply of blood. This has now been proved by many cases in which ligatures have been placed for surgical purposes upon the common carotid artery, and in which the operation has been speedily followed by hemiplegia of the opposite side. I witnessed a case of this kind, in which, two days after the application of the ligature, the patient was suddenly seized with hemiplegia of the opposite side, without any loss of consciousness whatever, and in which the post-mortem examination showed a state of white softening of the cerebral hemisphere of the same side as that of the carotid tied. I myself put on record some years ago a case in which hemiplegia resulted from a state of white softening dependent upon defective blood supply,

which I believe is perfectly unique; and, although I have many times tried to bring about this pathological condition by tying the carotids of the lower animals, I have never met with decided success; but in the case to which I am now alluding the experiment was already performed for us by what one may almost designate a *freak of disease*. The case was one of dissecting aneurism: through a slit in the aorta blood in considerable quantity forced its way, by splitting up the coats of this vessel along the innominata, and for about an inch and a half up the right common carotid, where it coagulated, and thus formed a plug, which completely obliterated the cavity of the artery (carotid); I should add, that the dissected condition of the coats extended downwards along the arch and abdominal aorta in the belly, to the renal artery. When the accident occurred the patient fainted, but he recovered after a little time, under the application of the usual restoratives; and I saw him the same evening, and also the following day, and was greatly puzzled to tell what was the nature of the case; for the principal symptom was pain, referred to the back and the chest. But two days after the accident the patient suddenly became hemiplegic on the left side, without in the least degree losing his consciousness; and the characters of the palsy were precisely those of our patient upstairs, the paralysed muscles being perfectly flaccid and reflexed. He continued, however, to live on for eleven days, a very unusual thing in a case of dissecting aneurism, and then death took place, the coats of the first portion of the aorta having given way, and allowed blood to escape into and distend the pericardial sac. When we came to examine the body, we found a state of white softening in all those parts of the right hemisphere of the brain which are supplied with blood by the anterior cerebral artery, which, as you know, supplies the whole substance of the hemisphere. I may here observe, that the chief reason why I have been unable to produce this condition in the lower animals by tying the common carotid artery, is that their brains receive their chief supply of blood from the vertebrals, which appears to be even sufficient to keep up its nutrition, when both carotids are perfectly obliterated.

The state of white softening of the brain occurs chiefly in persons advanced in life—from fifty to eighty years of age, and upwards. In these patients it appears to depend upon a gradual change which takes place, to a greater or less degree, in the coats of all arteries of the body, but especially in those of the brain. This change, which is known generally under the term *atheroma*, consists in the deposition of earthy and fatty matter in the walls of the vessels, causing a degeneration of their tunics. Sometimes the deposits are confined to the larger vessels; sometimes the capillaries are diseased, and their muscular fibres have undergone fatty degeneration, as was first pointed out by Mr. Paget. The effect of these deposits is, that the capillary circulation throughout the brain becomes more or less impeded, being most so when there is most disease of the vessels. The brain substance, gradually becoming less and less perfectly nourished, passes into a softened state, and at length melts down. The solution of continuity of nerve fibres which thus occurs, results in the effectual cutting off of all communication between the centre of volition and the opposite half of the body, and induces a state of hemiplegia. It is precisely this process which, I believe, has taken place in the subject of our remarks to-day. If, then, the malady be due to a diseased state of the arterial system, and especially to a fatty condition of the cerebral capillaries, the walls of which have scarcely strength enough left to retain the blood within them, it is quite clear that the lesion is essentially of an atrophic nature, and in no way due to any overflow of blood to the brain. And it is in cases of this kind that true apoplexy most frequently occurs—that is to say, in which blood in greater or less quantity becomes effused into the brain—and the blood thus poured out often ploughs up the surrounding nervous substance, so as to form a considerable cavity, in which the clot is contained.

How do we distinguish this apoplectic condition from simple softening? and how do we know that in the case of our patient, Mary Anne Godfrey, true apoplexy has not occurred? The reason why I say there is no effusion of blood in this case is, because a very small clot will almost invariably induce more or less of a comatose condition. A clot no larger than the end of one's little finger will generally give rise to a lethargic condition at least, if not to perfect coma; and this will usually be accompanied with more or less of snoring. When hemiplegia is

dependent on a state of simple white softening, though the patient may for some time after the stroke be for a brief period unconscious, lethargic, and inclined to gape, yet there will be no prolonged loss of consciousness, and the intellect will generally recover itself perfectly—this last depending partly on the normal nutrition of the greatest portion of the affected hemisphere, and partly upon the healthy state of the opposite hemisphere.

Again, (and here, in consequence of want of time, I must speak rather dogmatically, although these conclusions, I should tell you, are drawn from close clinical observation, together with the results of numerous post-mortem examinations,) if blood be effused into the brain, provided it encroaches on and more or less lacerates healthy brain, then there will be more or less resistance or rigidity of the palsied muscles, while if the clot be large the symptoms of coma will be very decided and prolonged; the patient will lie in a heavy sleep, from which he can be roused only with great difficulty, or, perhaps, not at all. On the other hand, when you come to the bed of a patient labouring under hemiplegia from simple white softening, you will find him, generally speaking, able to answer questions readily and rationally, although in some cases his speech may be "thick," according to the extent to which certain muscles of articulation and deglutition may have been affected, or to which the centre of emotion may have been involved either by shock or actual disease. We conclude, therefore, that the hemiplegia in the woman upstairs depends upon an atrophic softening (white softening) of certain central parts in the left half of the brain.

The history of this patient affords confirmation to this diagnosis. There is an account of her having had two or three epileptic fits prior to the first attack, and it is not improbable that both it and the second attack were real epileptic fits, so that it is very likely that the hemiplegia, or rather the white softening upon which it depends, may be associated with the conditions which give rise to the epileptic paroxysms.

Taking then this view of the nature of the case, what treatment did we pursue? You have heard the remedies which were employed prior to the patient's admission into the Hospital; and you will now, perhaps, not be surprised to learn that the plan which we adopted was precisely the reverse of this. A general supporting plan of treatment was resorted to; at first ammonia and chloric ether were exhibited every four hours, and with these a little wine was given; and during the last few days the patient has been taking quinine. Now, if the hemiplegia depended upon any hyperæmic or plethoric condition, upon a too highly nourished state of brain, or upon the presence of too much blood within the cranium, no measures would, probably, have been productive of greater harm than those to which we have had recourse; but on the contrary, our patient is slowly and gradually improving: slight reflex actions are now capable of being excited in the paralysed leg, and this limb will doubtless be the first which will recover itself, after which the palsy will disappear from the face and tongue, and lastly from the arm, for this is the order in which the recovery of paralysed limbs generally occurs.

I may here state that when this woman was in the hospital in 1850, for a similar attack of hemiplegia, the paralysis was on the *left* side, whereas it is now on the *right* side; and the treatment upon which she was then placed was exactly like the course which is now being pursued.

She left the hospital then, perfectly well, and continued so, with the exception of her being almost constantly subject, in a greater or less degree, to rheumatic pains until the present attack.

It often happens in cases of hemiplegia dependent on white softening, that the patient recovers perfectly from the first attack, and, after a longer or shorter interval, gets another stroke of palsy; and this second seizure is rarely on the same side as the first. The reason of this appears to be, that the affection depends upon a diseased state of the blood-vessels, and that this last morbid condition is the result of a symmetrical process, affecting both sides of the brain alike, but as it does not generally proceed exactly *pari passu* on the two sides, it is usually found in a slightly more advanced stage on one than on the other. This is a most interesting pathological fact, as it well explains the point in the clinical history of those cases to which I have just adverted.

Some of you may ask, How does recovery take place in these cases, and what changes occur then in the softened parts of the brain? It is impossible, in the present state of knowledge, to speak upon this subject otherwise than speculatively. As regards the fatty and earthy degeneration of the coats of the blood-vessels, upon which depends the defective blood-supply which so often immediately induces the state of white softening, this, I should imagine, is a morbid condition which never recovers itself; but although this is probably the case, still as the softening is generally due directly, as just said, to some stoppage of the circulation in the brain, to the plugging, or the obliteration by some means of some vessel, so it appears reasonable to suppose that in the cases of recovery a collateral circulation is established sufficient to restore and maintain the normal nutrition of the softened brain; just as occurs when the main artery of a limb is tied for surgical purposes. This appears to me to be the most reasonable explanation of these phenomena, the correctness of which further observation must determine; however this may be, I feel satisfied from clinical observation that this simple white softening is capable of being repaired. But in very many cases the process of repair does not take place, the brain-fibres remain inadequately nourished, and so the case proceeds from bad to worse; the paralysis never recovers itself, the temperature of the palsied limbs falls below the normal standard, and the paralysed parts suffer in their capillary circulation, and often in consequence become œdematous. It is not very uncommon to see patients suffering from paralysis dependent on an atrophic condition of the nervous centres, whose palsied limbs are perfectly dropsical, although there may be no œdema of any other part of the body.

It is quite unreasonable, therefore, to think of treating such cases as that of our patient upon any other than a supporting plan. What you should do is to endeavour to improve the condition of the blood, and uphold the strength of your patient in every way that his digestive power will permit. If you do this you need not look upon these cases as hopeless, as used frequently to be done in former years; for upon this plan you will often find that these patients will go on for months, or even years. You see the practice which I almost invariably pursue, and many of you well know that it is a very rare thing for us to get a post-mortem inspection in these cases, as, unfortunately for our scientific researches, these patients wont die. Although we do not effect more cures now than formerly, certainly our patients live longer, and we generally send them out of the Hospital in a comparatively much improved condition; and this, I sincerely believe, is mainly, if not entirely, due to our adopting a supporting plan of treatment.—*Med. Times and Gazette, Feb.* 6, 1858, *p.* 131.

14.—ON THE VALUE OF TONIC TREATMENT IN SOME DISEASES OF THE BRAIN.

By F. C. Skey, Esq., Surgeon to St. Bartholomew's Hospital.

I wish to speak of what is called "Ramollissement," or softening of the brain. I do not wish to speak of its pathology; I know very little about that, as to whether it is inflammatory or febrile, or what not. All that I pretend to know or to tell you is that the disease, as we see it, begins insidiously by loss of muscular power, and it occurs most frequently in men about the middle period of life; the gait or walk of such a patient is unsteady, and it seems natural to ask a surgeon what may be the cause of this unsteadiness or irregularity. A banker or a banker's clerk finds his style of writing changes; he has power, *quoad* power, he can use a dumb-bell, but he cannot regulate this power so as to write a letter, as he previously had done; his urinary system becomes affected, and his urine dribbles away, and even the rectum, from forgetfulness on the part of the patient, becomes partly paralytic; there is loss of memory or incoherence of ideas; small eccentricities appear. This man will spell some words badly; these are signs of recent cases: there is little or no implication of the reasoning powers, at least to any extent, but the loss of power, as in handling a pen to write, is most peculiar, *as well as* the irregularity of spelling of monosyllables badly or backwards in what *is written. But if* you wish for a more minute description of the disease, you

will find it in the works of Rostan and others. Now these cases are common; this train of symptoms occurs in men who have undergone long anxieties in business, or otherwise; men of parliament or the Stock Exchange, whose "all" may sometimes depend on some bold speculation, or on some cargo of goods at sea, or the like; or this disease will occur in men who have had exhausting fevers or other maladies; or again, in the case of a man who rides with hounds five days a week, four hundred miles a week, and it may be, drinks wine, eats very little, marries late in life, suffers from venereal exhaustion!—his nervous system becomes "broken down," as it is called. What is the condition of the brain then? Is it a condition of excess of vascular or vital force, or the opposite? Can any of you recall a case of "ramollissement" as it used to be treated a few years ago? Happily for yourselves, perhaps not; but the principal point was to keep always in mind "chronic inflammation," and to treat it accordingly. This poor gentleman must first be reduced, made to keep quiet, his diet regulated, his wine and fox-hunting stopped, and three grains of grey powder with rhubarb given at clock-work intervals, for what were called the "secretions," or to touch the gums for this chronic (?) inflammation. Next, his skin was steadily looked to, and that great catholicon of surgery lads, mindererus spirit, with antimony, was ordered, spoiling what little appetite the unfortunate patient may have had. He was rigidly confined to the house—but, mind you, with all this excellent drugging, his speech does not improve; he progresses, but it is from bad to worse. Very well! Now that is one view—now for another. Mark that there is a slow pulse, everything is below par, as I call it. In this, then, "chronic inflammation," some people count on their ten fingers all the drugs I use or adopt. I am very glad of it, for we have too much routine and rubbish in what is called "general practice." The eyes of the public are upon us; are you then justified in lowering this man with your antimony and your grey powder, and your mindererus spirit? Oh, no! But some Solon says you weaken the patient in order that he may get strong. In these cases I could never understand that kind of logic; believe me, if you wish to succeed in practice, you must give up such an idea; you must study nature a little more, and books and journals less. All the medical world of Europe is progressing; but we are still tied down to grey powder, and oceans of physic, and bleeding, whereas what is required is that we follow the vis medicatrix and take advantage of the hints she affords us! Well, then, so much for that; now for a case of "ramollissement" as it is called. About two years ago, a physician called on me; he said, "You are wanted down to so-and-so (150 miles in the country). Mr. So-and-so (a rich country nobleman) has forced a catheter through his urethra; the poor gentleman has got 'ramollissement;' you know that we are not so uneasy about; that is incurable of course; if you can do any thing for it, well and good; but his faculties are completely gone." Well, to make a rather long story short, Sir B. Brodie and I saw him, and a fortnight after he came up to town, to his residence in Belgrave-square, and I had nearly the entire management of the case.

It is exactly in this sphere of life, of rich noblemen, merchants, or political men in the fashionable West-end squares, that we can alone catch glimpses of these two opposites—viz., the excess of high living, and the excess of Sangrado bleedings and starvation or low living of us the doctors! Many of these cases are probably "heart disease," and a patient dies of a fainting fit, called weak brain, but it is weak heart! Well, the more I came to look at this case of this gentleman, the more I said to myself, the man is dying of exhaustion. I noticed he was better after dinner; I heard that he had had convulsions; this did not frighten me. Now, I want to ask you a curious question; have you ever seen a sheep killed? If not, I would advise you the next time you are near Aldgate market, just to look at the thing for yourselves. Just before all the blood is gone from the sheep, it is horribly convulsed; remember that fact also in weak children who are convulsed. Convulsions, in fact, as you will meet them in practice, are eight times out of ten the result of a very irritable state of the medulla oblongata or chord, which causes very slight irritations elsewhere to excite violent reflex or convulsive movements; thus, worms or indigestible food will cause convulsions where the nervous centres are weak or irritable. This condition of convulsions to my mind is almost always one of "exhaustion" rather than congestion; just mind

that fact when you go into practice—convulsions, as caused by anæmia, or "exhaustion."

But to go on with the case, I could not find that this gentleman had had any tonic treatment. I knew that if the brain be anæmic, it cannot go on long in a normal manner, for nine out of ten cases of "ramollissement" are due to anæmia; so I decided to let him go back to his old mode of living. I gave him a pint of claret a-day, that he was accustomed to, in place of water-gruel! He seemed to improve on it. The ratiocinations of his friends did not come true that it would kill him, so we let him have also quinine and iron in place of leeches and water-gruel, and grey powder, and antimony, and mindererus!

I studied the case for a short time; there was a manifest improvement every week. I was called one day; he was a little worse; did I bleed him? No: I had the experiment with the sheep in my mind; he is a gentleman of very great eminence. It would have appeared very brilliant in a "bulletin," like the brilliant operations elsewhere, that we came up the fifty-ninth minute of the last hour of his sad existence and opened the carotid or temporal, but I did nothing of the kind: I increased his wine. Well, at the expiration of three months, that gentleman made a political speech that utterly astonished his constituents. He can now ride to the fox-hounds as well as ever he did, and in the changes and chances of Parliament has filled a very important place; he is in fact, to all intents and purposes, cured!

Now, a few words on another case. I was called to see another gentleman, who, I was told, was attacked with "epileptic or some fits" every fortnight. I found they were not perhaps epileptic, as he was never incoherent or deprived of consciousness.

He was a "*bon vivant*," as many of these patients are. The symptoms came on two years previously; his pulse was all along small and weak, quite incompetent to the work, as I thought, of supplying a large and active brain. His doctor had ordered him, as a great stretch of the roborant plan, two wine-glasses of claret at dinner, mixed with water, and pump-water, "usque ad nauseam," the rest of the day. How can you prevent or cure disease on such trash as that? Mind you, he was a "*bon vivant*," and had now come to believe that the cardinal point of his cure was rest and starvation. Well, I ordered him the first day a thing he very much wished for—two rattling tumblers of Bass's best ale per diem, and other treatment in accordance with that plan: he got better. His lady sent for me, however, one night, and I met her on the stairs looking very dolorous indeed. I thought he was dying, or dead; but she said, with a solemn face, "he took advantage of our prescription, what *will* become of him? He has taken to-day seven tumblers of ale!" "The deuce he did; but he is the better of it. I am delighted," I said; and it really did him no harm but good: he had ridden twelve miles, and was tired, and quenched his thirst in Bass's ale accordingly! Now, that gentleman soon lost his fits, or at least he had a slight fit once in three months in place of once every fortnight. He got on most famously under the strengthening plan, as in the former instance; but in an evil hour he went down in the country in the summer, and on the return of his "fit" the next-to-hand surgeon, with a red lamp, was sent for, who bled him, gave him the orthodox doses of calomel and colocynth, followed up by—and—yes—but he never breathed again!

I have had now nine or ten of these cases of ramollissement; they all have had slow pulse—a condition always improved by tonics. The heart is perhaps at the root of the disease rather than the brain; some of these patients had alarming syncope—that is heart, depend on it, not brain. I met Dr. Latham and Dr. Ferguson with one case, and we had a good deal to do to give force to the heart and pulse.

Now, I do not want at all to say—that in some of these very cases we may not have had "ramollissement." I merely contend for the position, that leeches, oceans of physic, and starvation, are not the proper remedies. I will only say a few words relative to another case, which was seen by three of our ablest physicians in London—two pronounced it "ramollissement," and the third "tubercle." *I think tu*bercle in the brain is a very rare disease in adults; this patient had *excessively weak pulse*; he had married late in life, and in many other particu-

lars he was the exact counterpart of the case already given; he was rather forced on me as to treatment. I gave him wine and the ferro-citrate of quinine in large doses—a remedy I have great faith in. Well, in three months he was quite recovered. I have said already I do not believe this disease to be of the nature of inflammation; with heat, pain, redness, swelling, &c., it strikes me as rather of the nature of gangrene, and as arising from anæmia, not hyperæmia. This last gentleman, I ought to say, had an issue ordered for him in Dublin. Well, I have no objection to an issue in these cases, nor am I frightened at stopping an issue. There is something of the fabulous about what is written and taught in lectures as to stopping issues. This gentleman's issue healed up, or rather I took off the plaster, and never had that abiding faith in its efficacy that would induce me to put it on again. In the earlier stages an issue may do good; it can at least do no positive harm, like other things which have had more than a questionable character, as specifics for "ramollissement;" indeed, specifics so called, which unquestionably have hurried many patients to their graves, and which I would implore you to consider well in all their bearings before you adopt them.—*Dublin Hospital Gazette, March* 15, 1858, *p.* 92.

15.—ON INCOMPLETE PARALYSIS OF THE LOWER EXTREMITIES, CONNECTED WITH DISEASES OF THE URINARY ORGANS.

By T. Spencer Wells, Esq., Lecturer on Surgery at the Grosvenor Place School of Medicine; Surgeon to the Samaritan Hospital, &c.

[This form of incomplete paraplegia seems to the author to be on the increase in this country, especially among the younger men.]

My attention was first directed to this disease in 1845. Since then I have had eleven cases under treatment, and have seen occasionally about thirty others. Some of the latter were very probably ordinary cases of paraplegia depending upon softening, atrophy, or some other disease of the lower portion of the spinal cord. This disease will be fully described to you by my colleague who occupies the medical chair; but in the cases I allude to the paralysis is not dependent on spinal disease, and it is closely associated with diseases of the bladder, of the kidney, or of both. And here let me at once guard you against another source of fallacy. In all cases of paraplegia from injury or diseases of the spine the bladder participates in the debility, and after a time it empties itself imperfectly—a little urine remains behind every time that urine is discharged—the mucous membrane of the bladder falls into a state of chronic irritation and viscid mucus or muco-purulent matter is thrown off from the surface. This acts as a ferment in the urine, leading to the decomposition of some of the urea it contains, and the evolution of carbonate of ammonia. Here the urinary disease is merely secondary. It is only one of the effects of spinal disease. In the cases I allude to the urinary affection is the first noticeable point of departure from the state of health. If not actually the primary disease, it by no means plays the secondary part of the urinary affection in ordinary cases of paraplegia.

When a patient comes to you with a tottering gait, complaining of weakness in the knees, a tendency to stumble in going up and down stairs or on any uneven ground, and a certain loss of that muscular sense which enables us to walk without watching the feet to know where to place them at every step, your first impression will be very naturally that you have to deal with a case of spinal disease. Your first impression may be correct. As you proceed with your examination of the case you may obtain evidence of some injury to the spine, some distortion of the bones, some displacement from caries of the bodies of the vertebræ or ulceration of the intervertebral cartilages, some point at which pressure, or a sharp tap, or a hot sponge, causes pain—some history of inflammation of the cord—some indication of the pressure of a tumour, or of an aneurism of the cord—or possibly some proof that the disease is within the cranium. But you may find nothing of the kind. You have to exclude all these, and you are driven to assume a diseased condition of the lower portion of the cord, perhaps a simple atrophy, of the existence of which you have no other proof than the paraplegic symptoms I have just

enumerated. Let me convince you then that you can have all these symptoms, that they may go on to complete paraplegia, and the patient may die, and that then you may find the cord perfectly healthy, so far as our examination can teach us, while the kidneys and bladder are the seat of manifest disease.

Rayer, in his great work on the diseases of the kidneys (vol. iii., p. 168), says, "The development of paralysis after diseases of the urinary passages is even now a fact unknown to a great many physicians."—I think the observation would apply to many English as well as French physicians, though Mr. Stanley published accounts of several cases of paralysis following nephritis so long ago as 1833, in the 18th vol. of the Medico-Chirurgical Transactions. His paper is entitled, "On Irritation of the Spinal Cord and its nerves in connection with Disease of the Kidneys." He narrates cases of disease in the kidneys existing in connection with tenderness of the spine and paralysis of the lower limbs, which were, in consequence, treated as cases of disease in the fibro-cartilages and bodies of the vertebræ. I will read you four of these cases in Mr. Stanley's own words:—

"The first of these cases to which my attention was directed, occurred in the year 1818, in a man admitted into St. Bartholomew's Hospital on account of paraplegia combined with retention of urine. Both sensation and the power of motion were entirely lost in the lower limbs. On examining the spine, tenderness on pressure was discovered at the third lumbar vertebra, which, viewed in connection with the other symptoms, was considered to indicate the existence of disease in the vertebræ, and an issue was accordingly made in this part of the spine. Considerable amendment of the symptoms followed. Sensation and the power of motion were in a certain degree regained, and the retention became changed into incontinence of urine. Here the improvement ceased, the general health failed, and he gradually sunk.

"On a careful examination of the body, no disease could be discovered in the containing or contained parts of the vertebral column; the vertebræ, fibro-cartilages, spinal cord, and nerves were all perfectly sound, as were also the brain and its membranes. In one kidney were numerous small abscesses dispersed through its substance. The other kidney was gorged with blood, and its substance was much softer than natural. The mucous lining of the ureters and of the bladder was very vascular, and the muscular coat of the bladder was thickened.

"The next case occurred in 1821, in a man aged 35, admitted into the hospital on account of partial loss of the power of motion both in his upper and lower limbs, which had commenced about a month previously, and was supposed to originate in disease of the cervical vertebræ. He suffered besides from irritation in the bladder with occasional inability to expel the urine, which was mixed with some puriform fluid. In about six weeks from his admission, his health gradually declining, he died.

"On examining the body, both kidneys were found gorged with blood. In the substance of one kidney there were small depositions of pus. The muscular coat of the bladder was thickened, and its mucous coat very vascular. No morbid appearance was discovered in the brain or spinal cord. The vertebræ and their fibro-cartilages were perfectly healthy."

In Cruveilhier's Pathological Anatomy you may find a full report of the case of Sanson, a celebrated French surgeon. He died in 1841, after having suffered for more than a year from paraplegia. For several years before the attack of paraplegia he had suffered from enlarged prostate, difficulty in passing water, and then a calculus. Cruveilhier says, "M. Rayer and I could not misunderstand the importance of the coincidence of a disease of the urinary passages and the paraplegia, a coincidence to which Mr. Stanley was one of the first to direct especial attention. Chomel, Rayer, and Cruveilhier were present at the post-mortem. Extensive disease of the urinary organs was observed, but the vertebræ and spinal cord were perfectly healthy.

Lallemand, in his work on involuntary seminal emissions, has recorded many cases in which the patients were feeble or vacillating in their limbs, and afterwards subjects of incomplete paralysis of the lower extremities. I do not question *for a moment that* paraplegia is a common result of frequent seminal emissions, *voluntary or involuntary*; indeed, it is undeniable that the frequent agitation of

the nervous system, so caused, does lead to chronic inflammation and softening of the cord, with paraplegia as a necessary consequence. But any one who will read Lallemand's cases carefully will see that, in several of them, the paralysis was consecutive, not to disease of the genital, but of the urinary organs, such as chronic affections of the prostate, and subsequent nephritis or pyelitis.

In Dr. Neligan's edition of Graves's Clinical Lectures you will find a case in which chronic gonorrhœa, exposure to cold, and drinking whiskey, was followed by pain in the back, dysuria, and paraplegia. A stricture was found in the urethra, which was dilated; and Dr. Graves says, that a few days after the introduction of the first catheter power returned to the lower extremities in a remarkable manner. The patient left the hospital in little more than a month, having recovered complete use of his limbs, and passing his water perfectly well.

Last year, Dr. Raoul Leroy d'Etiolles published a work on Paraplegia, in which he records a great number of cases he has collected in the hospitals of Paris, or has observed in private practice, proving beyond dispute the very frequent occurrence of gonorrhœa, cystitis, enlargement of the prostate, retention of urine, and nephritis, as antecedents of paraplegia—a recovery of power in the limbs as the condition of the urinary organs improved—and in fatal cases, all the appearances of severe inflammation of these organs, while the brain, cord, and vertebræ were perfectly healthy. Many of his cases are extremely interesting; but time does not permit me to enter into their details. I trust, however, I have said enough to convince you that, while on the one hand disease of the urinary organs is constantly caused by paraplegia, so on the other paraplegia is frequently consecutive to disease of the urinary organs.

The next steps in the inquiry are, What is the nature of the urinary affection? and, How does it lead to paraplegia?

Now, in attempting to reply to the first question, I can say very little from my own observation, as I have not had an opportunity of making a post-mortem examination. But you will remember the state of the urinary organs described by Mr. Stanley in his cases. In these, and in many of the cases narrated by M. Leroy d'Etiolles, either one or both kidneys presented very evident signs of disease. In the acute cases there were all the marks of severe inflammation, with the formation of numerous small abscesses in the substance of the kidney. In more chronic cases the mucous membrane of the ureters, and of the pelvis and calices of the kidney, have been principally affected. It has been found soft and thick, coloured by injection in various degrees, and distended by purulent matter. The bladder has been found in every stage of disease, from simple injection of the mucous membrane to ulceration and perforation on the one hand, or hypertrophy and thickening on the other. The prostate has been found diseased very frequently, sometimes simply enlarged, and then the enlargement was mostly due to hypertrophy of one of the lateral lobes; or there has been that sort of transverse valve formed by the central portion, which we so frequently find as offering obstruction to the passage of a catheter. In some cases it was found full of pus, or small multiple abscesses were disseminated through its tissue. Sometimes the traces of an instrument which had traversed the gland were seen. Nothing very important was found in the urethra; but several patients had had strictures dilated during life.

Then, as to the next point, How can all this cause paraplegia? Here I must remind you of the anatomical connexions and physiological relations between the spinal cord and the great sympathetic nerve. You know that the vertebral portion of the sympathetic consists of a number of ganglia, united together by branches which pass from each ganglion to the one above and the one below it. There are twelve of these dorsal ganglia, four lumbar, and four or five sacral; and every one of them communicates with the corresponding spinal nerve. Some anatomists have even fancied that they have demonstrated the *origin* of the sympathetic to be in the spinal marrow. You know that the urinary organs are largely supplied with branches of the sympathetic. Here, then, is a direct path of nervous communication between the kidneys and bladder and the spinal cord. It is by this communication that the well known influence of the spinal marrow upon the secretion of urine has been explained. Injuries of the vertebræ, concussions or compressions of the cord, and inflammation of the

cord or its membranes, are all followed by the secretion of alkaline urine, or the development of ammonia in the bladder, while the bladder itself is more or less paralysed. The ready explanation has been that the sympathetic nerves supplying the kidneys and bladder did not receive their normal influence from the spinal cord through the spinal nerves. You may say we know all this, but what has it to do with the opposite action of the urinary organs upon the spinal marrow? Hear what Mr. Stanley said on this point before we heard much of Prochaska, Marshall Hall, and the reflex function of the cord.

"It might be thought improbable that irritation commencing in the kidney, or in the bladder, should be propagated through sentient nerves to the spinal cord, and that the impression should thence be transmitted through both the motive and sentient spinal nerves to the limbs, here occasioning an impairment both of sensation and of the power of motion. Some illustration of this subject seems to be furnished by the following researches of experimental physiology. If in an animal, 'a few seconds after it has been deprived of life, the spinal cord be then divided in the middle of the neck, and again in the middle of the back, upon irritating a sentient organ connected with either isolated segment, muscular action is produced, that is to say, a sentient organ is excited, and an irritation is propagated through the sentient nerve to the isolated segment of the spinal marrow where it gives rise to some change which is followed by an impulse along the voluntary nerve to the muscles of the part.' In the instances which have been adduced, irritation commencing in the nerves of an internal organ, the kidney or bladder, has been transmitted through the spinal cord to the motive and sentient nerves of the limbs; but the same phenomena may occur in an opposite order, as in the case of a compound fracture or other severe injury of the lower extremity followed by retention of urine, from irritation arising in the anterior crural and ischiatic nerves, and communicated through the lumbar and sacral plexuses of spinal nerves to the nerves of the bladder."

When we obtain a more exact knowledge of the reciprocal influence exerted by the spinal cord and sympathetic ganglia upon each other; when we can determine what power the sympathetic receives from the cord, and what power it communicates to the cord, we may obtain more definite notions on these points. But I think what I have said is enough to show that if you disturb the normal condition of the sympathetic nerves supplying the kidneys and bladder, you need not be surprised at an alteration in the condition of the spinal nerves, with which the disordered sympathetic nerves communicate, or in the condition of the muscles which derive their motor power from the spinal nerves whose relations with the sympathetic have been disturbed.

But another explanation may be offered. I need hardly tell you that when you have disease of the kidneys, even if only their excretory functions be disordered, the nervous system may suffer in another way. The blood is not purified as it ought to be from the constituents the kidneys should remove from it, or it is modified by the removal of constituents the kidneys should not remove. In this case the nervous system suffers in common with the whole body, from the abnormal condition of the fluid on which its nutrition depends, and it occasionally suffers before other organs, or to a greater degree than they do. But I think we must have something more than this to connect urinary disease with paraplegia as cause and effect. You want to account for the lower extremities only—not the whole system—suffering, and you cannot do so very satisfactorily by chemical changes in the blood.

Then I should not omit to mention another reason for supposing that the sympathetic nerve plays an important part in this form of paraplegia. Gastric derangement is generally a very early symptom. Throughout the course of the disease it is usual to find a fissured, furred, slimy tongue; relaxed, turgid fauces; capricious appetite; alternations of want of appetite and voracity; thirst; a great tendency to eat fast, almost to *bolt* food; uneasiness, flatulence, and distension after eating; and constipation. These gastric symptoms are often far more troublesome to the patient than the weakness in his legs, or the bladder affection. Admitting the influence of the sympathetic, you can explain them readily enough by the intimate connexion of the renal and solar plexuses without bringing chemistry to your aid.

Now, to be enabled to distinguish this form of paraplegia from that depending on spinal disease, you must remember the history of the case, and compare this with the history of injury or disease of the vertebræ or intervertebral cartilages, or inflammation of the cord and its membranes, and bear in mind the following characteristics of the disease I wish you to recognise. They may also help you to make the more difficult diagnosis between this form of paraplegia and that depending on simple atrophy or softening of the lower portion of the cord.

1. Some impediment to the discharge of urine is one of the earliest symptoms.
2. This is closely connected with obstinate gastric derangement.
3. The weakness in the limbs is rather extreme debility than paralysis.
4. The tactile sensibility is slightly if at all impaired, but the muscular sense may be almost lost.
5. The limbs are tolerably well nourished. They may be thin, but there is no marked muscular atrophy, and their temperature is very little lowered.
6. The sphincter ani is not paralysed, though it may be weak.
7. The bladder preserves some degree of contractility.
8. There may be no pain in the back, and no pain on pressing the spinous processes or applying a hot sponge to them.
9. The degree of weakness in the limbs varies with the state of the urinary organs. Great amendment will sometimes rapidly follow catheterism and the removal of any obstruction to the free discharge of urine.
10. In the early stages of the disease there is no history of convulsions, cramps, spasms, formication, or violent neuralgic pains.

[The opponents of tobacco say that smoking in excess favours paralytic affections; it certainly impairs digestion, and is better avoided in these cases. Cold bathing also may favour it.]

You will take into account, then, both tobacco and cold bathing as causes of paraplegia, but without attaching too much importance to them. I am disposed to attach much more importance to sexual irregularities—the occasional excess and occasional abstinence—which follow the state of celibacy, or the late marriages of the present day. The excessive luxury of our age brings its own punishment with it. If young ladies cannot wear a dress which costs less than twenty guineas; if they are not content with dressing *themselves*, but will insist on carrying about a preposterous cage of hoops and rings four times the size of the human figure, and covering this with silk at a guinea a-yard; if they will spend five or ten guineas on a bonnet which affords neither shelter nor warmth to the head, they cannot expect a moderate man to ruin himself with milliners' bills, and need not be surprised if he shrinks into his solitary bedroom, and lives at his club. If young gentlemen must spend thirty or forty pounds a-year in cigars; if they will drink claret and champagne; if they must have a "trap" or a hack at the very least; if a stall at the opera is indispensable, and the pocket not very deep, it is very clear that nothing is left for the wife and children. If parents of moderate means, who have brought up their children respectably, will not allow their daughters to marry a man who has to make his way in the world, but insist upon a house and servants and carriage, we need not be surprised at the number of old young ladies and old young men we meet with everywhere; and we need not be surprised at the physical evils which flow from such an unnatural state of society.

Lastly, as to the *treatment* of this disease. If you see a case in its very early stages, take care to remove any obstruction to the free discharge of urine. Use bougies until a full-sized instrument passes freely, and then endeavour to correct anything that may be acting injuriously upon the general health. Give such rules as to diet, exercise, residence, clothing, bathing, and change of air, as will tend to restore any lost vigour. Attend carefully to the condition of the urine, and regulate your medicinal treatment accordingly. Put your patient on his guard as to the possible progress or return of his disease, and you will not do your duty, as I believe, without advising him earnestly to marry.

When you have a more advanced case to deal with, the condition of the digestive organs will be a primary consideration. The tendency of constipation must be overcome, and I think a daily enema of warm water answers better than any dinner pill or aperient draught. If you do give pills avoid aloes, as they are apt to increase the urinary irritation, and saline purgatives for the same reason. Gre-

gory's powder is as good an aperient as you can use. An elastic belt worn round the abdomen will tend to make up in some degree for the weakness of the abdominal muscles, and help to remove one of the causes of constipation. Then, as to the state of the stomach, I believe you will do more good by careful diet than by any medicine. I have seen every kind of remedy tried and very little good done by any. Lastly, two of my patients have taken pepsine, but without the slightest benefit. What really does good is a thorough change of life—a long sea voyage, mountain air, warm bathing, and a course of some one or two mineral waters.

The "grape cure," as it is called, I have known to prove very beneficial. At Meran in the Tyrol, and some other places, patients are kept while the grapes are ripe almost entirely upon them and bread. A little weak broth and rice is also given, but bread and grapes are the staple articles of diet. You will see at once how likely so complete a change of food is to modify—and modify for the better—the condition of the digestive and urinary organs. Besides, the life in the open air, the quiet, and hope, all act beneficially; and I can strongly recommend six weeks of the grape cure in the autumn after a summer at some of the mineral waters and warm springs.

Take a case still more advanced. The feebleness of the limbs is extreme—the patient can walk a mile or two, perhaps, but the gait is tottering, the urine is loaded with mucus, or muco-pus and the phosphates; it soon becomes ammoniacal after it is passed, and there is frequent desire to pass it. Attending to what I have said as to the earlier stages, other things will suggest themselves now, such as strychnine, galvanism, opium, steel, cantharides, and the medicines which have a specific action on the mucous membrane of the bladder.

As to strychnine, I have seen it tried in small doses, and I have seen it carried on till its characteristic effects have been produced. I have seen it do harm, but I never saw it do any good whatever. Galvanism, or electro-magnetism, on the contrary, I feel quite certain is of very great utility, but it must be used perseveringly. You may either send a pretty strong current through the weak muscles for a few minutes every day, or the patient may wear one of the little portable batteries sold by Mr. Meinig, with a pole fixed to each limb so as to keep up a constant mild current day and night. Opium is of great utility in relieving the general irritability, and the irritability of the bladder in particular. Iron may be useful as in ordinary cases of debility, but in the form of muriated tincture, and in combination with cantharides, it is sometimes followed by surprising good effects. In one case the good effect was so sudden and remarkable that I was almost led to accept the supposition of Dr. Seymour, that cantharides by its diuretic action tends to remove serum effused into the spinal cavity. In other cases I have seen the mixture of cantharides and iron tend to the restoration of great contractile power to the bladder, and relieve the frequent desire to pass water. I learnt the use of it accidentally from witnessing the good effects of one of the "Balms" or "Elixirs" sold by those Pariahs of our profession, who fatten upon the fears they set up and the diseases their vile books create. The usual dose is fifteen minims of the muriated tincture of iron, and half a drachm of the tincture of cantharides, twice or three times a-day.

As to the medicines which have an astringent action on the mucous membrane of the bladder—buchu, uva-ursi, chimaphila, and pareira brava—they are to be looked on as mere palliatives, and the last is the only one I have much confidence in. It is very useful when there is great irritability of the bladder, and a copious deposit of muco-purulent matter in the urine. You may give half a pint, or even a pint of the decoction daily, with opium or hyoscyamus if necessary. When the earthy phosphates are also deposited freely, you will find the diluted phosphoric acid very useful, and you may give this in half drachm doses in the decoction of pareira. If the deposit is more of the mixed phosphates the benzoic acid answers better. A favourite draught of mine is five to ten grains of benzoic acid, and half an ounce of mucilage, in two or three ounces of the decoction of pareira, with either twenty or thirty minims of tincture of hyoscyamus, or ten or fifteen of the solution of bimeconate of morphia. If the muco-purulent and phosphatic deposits increase to such a degree as to offer obstruction to the escape of urine, you should *wash out the* bladder every day with warm water. This gives great relief, and *if the irritability* of the bladder is excessive after you have washed it out, you

should inject five minims of the diluted hydrocyanic acid of the Pharmacopœia in four ounces of warm water, and leave it in the bladder. The soothing effect of this is remarkable, and you may thus obtain several hours' comfort for your patient even in the very worst cases.

You may remark that I have said nothing about the so-called nervine tonics, sulphate of zinc, oxide of silver, and so on. The reason is, that I have no faith in them. Your great object in these cases is to set the urinary organs to rights, to get the digestive organs into good order, and then to gain time for the restoration of the lost strength.

I shall only detain you a few minutes longer to add a word or two as to the mineral waters and warm springs which are likely to be most useful. A course of some aperient water, as Ems or Carlsbad, should be taken first, and then a chalybeate should follow. The Schwalbach springs are very good ones, varying in strength, so that the patient can begin with the weakest. Dr. Strúve's imitations of all these waters are very good, and you may use them if the patient cannot go abroad. Of the warm springs for bathing those at Wildbad and at Gastein have the highest reputation. The water at both is simply warm distilled water, so far as chemistry can teach us, but the effects are certainly different from anything we see after warm baths in this climate. I passed three weeks at Gastein this autumn, and saw a great many paralytic cases there, and whether it is the mountain air, or the warm water, or whatever it may be that does good, the practical fact for you to know is, that such cases do get better there, and get better in a very extraordinary manner, so that in obstinate cases you will be fully justified in urging your patients to pass a few weeks there.—*Med. Times and Gazette, Nov.* 14, 1857, *p.* 493.

16.—*On the Treatment of Delirium Tremens without the Use of Alcohol.* By John Higginbottom, Esq., F.R.S.—[The author has now discontinued the use both of alcoholic stimulants and opium in the treatment of delirium tremens. He says:—]

In the treatment of delirium tremens it is necessary first for the patient to abstain from all intoxicating agents.

In the beginning of a fit of intemperance, an emetic dose of ipecacuanha is invaluable, as mentioned in my paper in the *Lancet* for April, 1855, "On Ipecacuanha as a Remedy for Drunkenness," particularly as it has the effect of removing the desire for intoxicating drinks. I prefer ipecacuanha to the tartrate of antimony, as it produces no debilitating effects, and can be taken with perfect safety. It acts as a stimulant to the whole system; equalizing the circulation, promoting the secretions, and assisting each organ of the body to perform its functions. This remedy, with the assistance of needful aperients, proper diuretics and diaphoretics, given in a state of effervescence, tends to carry the *effete* matter from the system. It is necessary to continue these remedies for ten or fourteen days. My brother-in-law, the late Dr. Marshall Hall, who has been justly named "The English Physiologist," said to me, "If a man gets drunk, he cannot altogether get rid of *the nervous poison*, alcohol, from his body in less time than a fortnight."

The digestive organs being restored to their normal state, weak tea or coffee, or any other simple diluent, may be taken as a beverage; for food, light nutritious diet; *much exercise in the open air;* with a daily shower-bath, or sponging the whole body with water, will effect a cure.—*Lancet, Nov.* 20, 1857, *p.* 545.

17.—ON HEADACHE.

By Dr. John Addington Symonds, Consulting Physician to the Bristol General Hospital.

It will, I think, be a fitting commencement of our inquiry into this subject, to consider the mode in which we become acquainted with the locality of pain in general.

What is pain? would seem at first sight to be one of the most superfluous of

questions, seeing that pleasure and pain are the simplest, least decompoundable states into which consciousness can be resolved. But though pain is used in the abstract as expressing in shortest phrase the suffering of the *ego*, it seldom is presented to our notice without the association of some locality of the body. So much is this the case, that if a person complains of pain, we inquire immediately for its seat. Suffering, or a painful condition of the *ego*, may be quite independent of bodily feelings. In sorrow, mortification, and remorse, there is not necessarily any reference whatever to the body; but pain belongs to the body, and is attributed only by a metaphor to the mind.

The assignment of the seat of pain might seem, at first, to require only an appeal to the consciousness; but the inquiry, Where is the pain? receives not unfrequently the vaguest and most erroneous of answers, and sometimes none at all. But supposing the answer to be tolerably correct, let us endeavour to analyse the process by which the pain is referred to some determinate part of the body. Preliminary to this inquiry is another, How do we become acquainted with the topography of our bodies? It is undeniable that, to an enormous majority of mankind, a very large portion of their frames is utterly unknown. They know less of their bodies than even what a person who has never studied geology, knows of the structure of the earth. But we will not take into account such knowledge as the anatomist acquires, but only such as those are possessed of who speak of their bodies and their members.

There must have been a time in our existence when our bodies formed a part of the external world; which had to be learned by a gradual process of experience, analogous to that which subsequently made us acquainted with the position, distance, form, and properties of objects external to our bodies.

If you watch a very young infant, you can detect no indication that anything is present to its consciousness, but the bodily comfort or discomfort of the moment—hunger or satisfaction of the stomach—warmth or cold; perhaps there may be a faint perception of light and sound; but the strongest recognition of the *non-ego* is in those fibres of the fifth pair which are impressed by the nipple. It is highly probable that the muscular sense gives various impressions to the infant, but they are not as yet so connected with other sensations as to impart the knowledge of body and limbs. This knowledge, indeed, must be the result of the slow accumulation of coherent sensations, such as the sight of the parts in question, associated with the tactile sensations excited by the presence or the pressure of that on which the body rests, or of an applied or adjacent limb, as a hand or foot, and with the various muscular sensations incident to the movements of the limbs. The knowledge of some of the superficial parts of the body must be the result of inference or analogy. The shape of the back of the head, and of the trunk, being out of the range of vision, can only be known by the analogy of other human beings. When the parts of the body have been learned and appropriated to the unity of personal existence, a recognition which grows by degrees like the rest of this department of knowledge, and in conjunction with it, the individual is still far from such proficiency as would enable him to answer that apparently simple question, Where is your pain?

It is often in vain that you ask a child, otherwise quick enough in answering questions, whereabouts he is suffering; and even adults, though indicating a region of the body, seem perplexed in their attempts to define with more exactness. Some automatic actions of children appear at first sight to indicate a knowledge of the seat of pain, as when the hand is carried towards the head in meningitis. But such actions are to be observed in profound sleep and in coma, and in all probability they belong to the class which have their analogues in almost the lowest divisions of animal life, and may be seen in some animals after decapitation.

I think, then, we may assume that the conscious reference of common sensation to any particular part of the body must be the result of experience, whether it be correct or erroneous in its teaching; the experience itself consisting, as we have already hinted, in the accumulation of associated perceptions. The more frequent in occurrence, and the more diverse these have been, the more accurate *will* be the reference; as when tact and touch, and muscular sensation, and sight, *all contribute their* several items. The precision will also be proportionate to the

nervous endowment of the part in question, seeing that the tactile sensation itself is well defined or confused, according to the more or less liberal distribution of primitive nervous fibres.

However discriminative the sensibility of the skin may be, it is obvious that different impressions are perpetually sent from every portion of the cutaneous surface, whether from the contact of dress or from the collision of outward objects, or from changes of temperature, as well as from muscular movements,—and that by means of these, as well as by sight and analogy, the topography of the surface is well learned, so that when a new impression occurs in any part, the feelings of the part with which it is associated at once denote the locality of the impression.

But while this is the case with the skin, it is far otherwise with those parts of the body which are not so continually telegraphing the sensorium. Take the mucous surface which comes next to the skin and special organs of sense, in relation to the outer world. In the healthy condition of the digestive membrane no sensation is caused by the food from the time it leaves the gustatory part of the apparatus till its final expulsion, notwithstanding all the wonderful changes it undergoes, mechanically and chemically, as well as the immense variety of secretions which it causes to be poured out on the several portions of the surface which it traverses. The membrane seems equally insensible to the variations in the temperature of the solids and liquids applied to it. A man in health may therefore attain to extreme old age, and by reason of his health, and consequent unconsciousness of internal organs, be as ignorant as an infant of the topography of that tube by which he has received his life and strength. A like remark might be made as to the bronchial and other mucous surfaces; and if it be true of the mucous tissue, it is still more so of those which lie still farther removed from the external world, whether as serous linings or as textures composing the parenchyma of viscera, or the fabric of muscles, bones, &c.

Now though all these parts may be most accurately known by the anatomist, and though he may therefore apply the knowledge analogically to his own person, yet it will be very difficult for him to localize a new sensation, such as pain, by mere reference to his simple consciousness, without experience and inference; for mere consciousness will not distinguish mucous membrane from cellular, nor this again from serous. He will arrive at any correct localization only by a series of experiments and inferences. Some of these consist of observations on the effects of change of posture, or of the relative movements of other parts of the body, or on pressure with the hand, and on the influence of the outer air, or of the contact of foreign bodies, or of food or drink. But others are of a purely medical nature, and depend on previous knowledge of the functions of the parts, the products by secretion, &c. Were he the subject of subacute peritonitis he would need the information of pressure, and of the action of the abdominal muscles. And to say whether a pain in his side were pleurisy or intercostal rheumatism would require all his clinical knowledge.

These difficulties then which we meet with when referring to consciousness as distinguished from inference, for information as to the seat of pain in general, have peculiar force when we appeal to it for the source of pain in headache. The patient may entertain a dim idea that it is internal; or the tenderness of the scalp may make him think it external, but as to anything like exact information as to the parts which lie within the cranium, it would be absurd to look for it as the result of consciousness.

We have already hinted that these impediments to our knowledge of the source and seat of pain are enhanced by the fact that pain is easily diffused beyond its original source, or transferred in what we call sympathy. There is an obvious distinction to be drawn between the radiation of painful sensation, and the transference of sensation from one part to another. In the former case pain simply extends circumferentially beyond the part which is impressed by the disturbing agent. Physiologists are agreed that impressions are not communicated from one nerve to another in the way of anastomosis, but that the impressions travel separately along each individual primitive fibre to the sensorial centre.

Now, though nerves do not communicate in their course, a hundred facts show that there is a most prompt and intimate connexion between the related vesicles

of the central parts in which they terminate. It is by such a communication that that association of sense and ideas takes place which refers the new sensation to a particular part of the body. Say that a wasp has stung the dorsum of the foot. The nervous fibre on which the painful impression has been made, is so related at its central extremity with the nerves, whose several communications have by frequent association or coherence formed that complex idea, that bundle of recorded sensations which we label *dorsum pedis*, that the pain is at once referred to this part, and for a short time there may be nothing present to the consciousness but the point of pain, and the idea of the foot. But in an irritable habit the pain may soon extend to the whole foot, or even the whole limb, without any corresponding extension of the local irritation caused by the wasp poison. The fault is not in the periphery but in the centre. That condition of the central part in which pain consists is communicated to other like central parts, and their pain is by the law of their being referred to their several peripheries. In different subjects there is a vast difference in the readiness with which these communications are made. Persons are called irritable, nervous, susceptible, hysterical, when the proclivities to such communication are very marked. Such persons may also feel pains which have taken their origin from mere ideas. A bodily pain is described, and the idea of the pain is so vivid, and so readily yoked with the idea of the part, that it seems to be projected into that part, being, however, a purely spectral pain—just as a visual conception may be so vivified as to produce the same effect and conviction of reality as if it were a direct outward perception.

It is not uncommon for a person to be able to produce a sensation of cold through the frame by merely recalling some disagreeable sound or feeling of touch, which has elicited such sensation of cold. I know a person who is so distressed by the touch of woolly substances, especially coarse green baize, that when the mere idea of such a substance is called to his mind, he suffers a sort of horripilatio. I also know an individual who is particularly liable to a kind of vertigo on ascending a ladder, and who can not only bring on the feeling by imagining to himself some giddy height, but who also actually feels when under the influence of the same idea a sensation of pain in the soles of the feet. There is an obvious physiological relation between the plantar nerves and the feeling of equilibrium; but that the mere idea of a vertiginous situation should cause actual pain in these nerves which are only inferentially known to be connected with equilibration, seems to me to be a curious and interesting fact.

There are certain well-known sympathetic pains which do not come within the scope of the law of radiation or diffusion. Such are the pain of the shoulder in hepatic disease, but which in my experience has been oftener related with diaphragmatic pleurisy, the pain of the knee in disease of the hip joint, the pain along the genito-crural nerve from calculus in the kidney or ureter, the pain over the eye from ice applied to the interior of the stomach, and itching of the nose from ascarides in the rectum.

In these instances the impression is conveyed along certain nerves, reaches their centre, and without awakening a sensation in it, passes on to the vesicular termination of some other nerve either near or remote. When the origins of the nerves are so near as that of the phrenic and that of the nerves of the shoulder, the communication between their centres does not seem so difficult to understand, though why the impression should be transferred instead of being participated, is still obscure. With more distant nerves, as those of the stomach, even allowing the gastric branches of the vagus to be the afferent nerves in this case, it is not easy to see the mode of communication and metastasis between the origin of this nerve in the medulla oblongata, and the origin of the ophthalmic branch of the trigeminus. One thing I think worthy of notice is, that the metastasis is usually from a less to a more sensitive nerve. In the normal state the shoulder is oftener productive of sensation than the diaphragm or liver, the genito-crural nerve than the renal, and perhaps the knee than the hip; and certainly the nerves of the fifth pair than those of the stomach. When a mistake has been made, one can conceive that if two nervous centres are the seats of an impression, the consciousness may, by habit, refer it to that one, and its corresponding nerves, with which it has been oftener brought into relation. I need not say that the mistake is by no means the *rule, the sensation* being often referred to its real source; and that when the impres-

sion is a very strong one, both parts may partake of it. Thus we have known in a violent diaphragmatic pleurisy the pain in the side attended with equally severe pain in the shoulder and in the neck, to such a degree as, together with the absence of auscultatory signs, to have induced the erroneous belief that the case was one of rheumatism.

We shall have to return to this sympathetic translation of feeling when tracing the causes of headaches. In the meantime it may be remarked, that to the student of final causes some of these morbid sympathetic sensations are all but insuperable difficulties. What warning does that supra-orbital neuralgia give against the ingestion of ice? How seriously have the comfort of patients and the reputation of surgeons been affected by that misplaced pain of the knee! It may be that the general good of the economy may have required that the centres of certain nerves should be so related to each other, and to the nerves which originate the knowledge of localities in the body, that nevertheless in morbid states they may present this false information; but, so far as the sympathetic pain is concerned, it seems, like so much of pain in general, to be an unquestionable evil. Pain may often be curative or prophylactic, as if St. Michael had compelled it to be so; but not unfrequently it seems to be the true friend and servant of Lucifer. Perhaps a more philosophical rationale would be, that made on a certain plan conformable to the general laws of organization, in which decay and death are contemplated no less than genesis and preservation, the organism has pain for one of its destructive elements.

Putting aside for the present any reference to the patient's feelings, what do we learn from anatomical considerations as to the probable source of pain within the cranium when a person is the subject of headache? It does not appear to be in the nervous matter, whether vesicular or tubular, of the cerebral hemispheres or of the cerebellum. No evidence of feeling has been obtained by vivisectors till they approached the sensory ganglia—the thalami optici and corpora quadrigemina. But these are the centres of sensation to all parts of the body, as well as to the head. All analogy must further look for nerves as the source of the pain (though some writers are hardy enough to doubt the necessity of nervous matter as instrumental in sensation). And what are the nerves? Numerous as are the nerves which come out of the cranium, there are to a superficial view very few that go into it. A branch of the sub-occipital accompanies the vertebral artery; but a large majority of the other nerves, destined for intracranial purposes, are derived from the sympathetic. These, then, are the nerves which are of the chief interest to our present inquiry. Nerves of this class accompany blood-vessels; and when we observe the large amount of these vessels, the brain and its membranes being more liberally supplied with blood than any other organ, the quantity being computed as one-fifth of the blood of the whole body, we might, without searching further, feel convinced that there must be a correspondent supply of ganglionic nerves. But the minute examination of modern anatomists has tracked them in great abundance.

If we may trust the delineation in the plate representing the cephalic termination of the Great Sympathetic, in the magnificent work of MM. Bourgery and Jacob, which plate embodies the results of the dissection on which was founded the memoir presented by M. Bourgery to the Academy of Medicine, there is a vast interlacement of nerves at the base of the brain, derived from the plexuses of the vertebral, the basilar, and carotid arteries, mingled with threads communicating with the third, fourth, fifth, and sixth pairs of cranial nerves, besides branches in the cavernous plexus derived from some of the upper cervical nerves, as well as those connected with the pituitary body otherwise called the cephalic ganglion. The nerves proceeding from this network and accompanying the arteries of the brain must possess the mixed endowment of the several sources. But whether or not the sensory properties of ganglionic nerves are entirely dependent on the cerebro-spinal fibres contained in them, as Valentin believes, or whether they arise from the grey fibres which become sensitive when altered by disease, as Volkman supposes, these are questions which it would be irrelevant to discuss on the present occasion.

It is enough for us that the composite nerves of this class seem to fulfil almost every conceivable function of a nerve. Whatever they may effect on the chemi-

cal processes of the molecular laboratory of ultimate tissue; whatever regulation they give to the blood-vessels, it can scarcely be doubted that in many parts of the body they send messages of pain, if not of pleasure, to the sensorium, and that they transmit influences from the seat of emotion to the parts where they are distributed, and it is not proved that they do not possess a kind of reflex function. They only seem not to attempt to convey motor impulses from the will. That our general sense of well-being must derive its favourable tidings from the viscera through these nerves can hardly be doubted; but certainly there is no other channel through which flow the miseries and anguish of ordinary visceral disorders.

Admitting, then, that the ganglionic nerves distributed through the brain and its membranes are implicated in painful affections of the organ, our next inquiry would be turned to the agencies which so act upon them as to cause painful feeling. Some of these are obviously local changes in the cerebral structure from organic disease, inflammation, and injuries. There are also changes in the blood, as in the headache of fever. But there are also disordered states of the nerves themselves resulting from functional causes, as in excessive mental exertion and emotional excitement. Other causes again act by sympathy; through the nerves of special sensation for instance, as when vivid light and loud noises excite headache. There are also very familiar examples of pain in the head, occasioned by impressions on branches of the fifth pair, as well as on gastric and intestinal nerves.—*Med. Times and Gazette, March* 20, 1858, *p.* 287.

18.—*Use of Phosphate of Zinc in Epilepsy, at the "Dreadnought" and Metropolitan Free Hospitals.*—During the last two years Dr. Barnes has extensively tested the restorative and curative powers of phosphate of zinc—a new remedy introduced by him in the treatment of epilepsy and other nervous affections resulting from cerebral exhaustion. This physician was led thus to combine phosphorus and zinc by reasoning upon the known efficacy of zinc in epilepsy, and the fact that in exhausting nervous diseases there appears to be a waste of phosphorus in the brain matter. The importance of phosphorus as an element of the organization is further exemplified by the richness of the more nutritious cereal grains in this substance. It therefore seemed a reasonable indication to administer the two elements in combination. Experience has fully justified this idea. In convalescence from fevers, which induce great wasting of tissues, and notably of brain-matter, to the extent, not unfrequently, of leading to insanity, Dr. Barnes has exhibited the phosphate of zinc with quinine and other remedies with the most satisfactory results. In combination with conium, it is frequently exhibited with advantage in phthisis in preference to the sulphate of zinc. But it is especially at the obstetric clinique at the Metropolitan Free Hospital that the good effects of this remedy have been illustrated. The following case is a type of a large number:—A woman, aged twenty-three, the mother of four children, was first seized with an epileptic fit at twelve years old, after a fright. Similar fits occurred frequently since, but were more frequent and severe during suckling, remitting somewhat during pregnancy. She never had convulsions during labour. She usually, whilst suckling, menstruates about five months after delivery, and becomes pregnant. She was suckling, and the fits were frequent, when she was ordered phosphate of zinc, four grains; dilute phosphoric acid, twenty minims; tincture of bark, half a drachm, three times a day. After taking this for a fortnight, the patient's account was, that the fits were "backened" by the medicine. She had had headache, slight vertigines, but only one fit. She continued for three months improving much in health, and had no return of epileptic seizures. In the menstrual form of epilepsy, when accompanied by exhaustion and anæmia, the remedy has been of equal service. In one case of insanity following on exhaustion produced by lactation for eight months, the phosphate of zinc, judiciously combined with other remedies, completely restored the patient to physical and mental health in three months. Dr. Barnes often refers to the readiness with which the phosphate of zinc adapts itself to the peculiarities of different cases by the facility of combination with various other remedies. He prescribes the dilute phosphoric

acid as the proper solvent. With this basis, he combines tincture of valerian, tincture of cinchona, calumba, quinine, or iron, according to the indication present. It is less liable to cause vomiting than the sulphate. The experience of Dr. Barnes is certainly decisive enough to recommend the phosphate of zinc to the attention of the profession.—*Lancet*, *Jan.* 30, 1858, *p.* 119.

19.—STRYCHNIA, AND ITS USES.

By H. R. De Ricci, Esq., Surgeon to the Ballymahon Hospital and Dispensary.

[In cases of paralysis arising from lesions of the encephalon and in epilepsy, strychnia is absolutely injurious; whilst in chorea and paralysis agitans, it is at best useless.]

The diseases in which I have found nux vomica and its preparations of most use are those where, from some cause or other, the *nervous powers* are not as vigorous as they should be,—where there is a lassitude and a want of tone in the system,—in short, in cases of *functional derangement;* whilst in lesion or disease of the nervous centres, its employment has always proved injurious in my hands. In every form of dyspepsia not arising from organic lesion, its use will be found advantageous, but most especially in the dyspepsia of literary men, lawyers, and scholars, especially when accompanied by constipation. Also in that relaxation of the muscular fibre, total lassitude, and want of tone, for which the physician is so often consulted by ladies who go out much into society; a state almost invariably accompanied by leucorrhœa, indigestion, loss of appetite, and a certain amount of erethismus,—here nux vomica and its preparations will be found of the greatest value. But it is in chlorosis that its efficacy will be really manifested,—for though chlorosis is ranked as a blood disease, it is more strictly speaking a disease of impaired innervation; and the deficiency of red discs in the blood, which causes the peculiar greenish yellow colour of the patient, and from which very appearance the name of the disease is taken, is the effect of imperfect assimilation, the primary cause being either an impaired or perverted action of the nervous functions, a fact which will be apparent to the most superficial observer: for how often will be found, out of a large and healthy family, one of the daughters, *and one only*, acquiring by degrees the pallid look of incipient chlorosis, while all the rest retain their wonted healthy aspect; and yet the sickly one has all the while been exposed exactly to the same physical conditions, breathed the same air, dwelt in the same rooms, eaten the same food,—why then should this one be deficient in blood-discs? If now the careful physician searches into the cause, he will, in all probability, find out by degrees that, some time previous to the setting in of the disease, the patient had suffered from some strong mental emotion, a sudden fright, or sudden unexpected sorrow,—and from that had dated the commencement of her illness.

By far the greater number of chlorotic cases which I have met with in the upper classes had their origin in some such mental impression, and this fact would of itself, I think, be sufficient to characterise this disease as one of deranged nervous function, even if we had not the corroborative testimony derived from medical treatment. Now, if a case such as I have supposed, is treated solely with chalybeates, but little progress will, in all probability, be made towards recovery: in vain you will administert he metal so much needed by the system,—the lacteals will fail to discern and appropriate it. It will pass away by the bowels, and there do mischief by increasing the constipation already, most probably, existing. To remedy this the usual purgatives of aloes and other such drastics will be recurred to, probably in heroic doses, and then, by increasing the debility, the patient will be placed in a worse condition than before. Let, however, the iron be combined with quina, a medicine which I need not say acts especially on the nervous system, and the improvement will be manifest; but if for quina you substitute strychnia, then the effect will be truly surprising. Until lately I was in the habit of adding the strychnia in solution to a bitter vegetable infusion containing some preparation of iron, generally the citrate, but my friend Dr. Aldridge having brought under my notice a double citrate of iron and strychnia, analogous to the

well-known preparation of iron and quina, I have adopted its use with marked advantage and success. This salt contains, I am told, one grain of strychnia in every hundred. The dose I have been in the habit of commencing with has been two grains twice a-day, immediately *before or after* a meal, selecting in preference breakfast and lunch, and increasing its gradation to ten and fifteen grains twice a-day. My prescription has generally been the following:—Citrate of iron and strychnia, forty-eight grains; chloric ether and aromatic spirit of ammonia, of each a drachm and a half; infusion of chiretta, sufficient to make a twelve ounce mixture: of this, a table-spoonful at dinner and lunch. By the use of this combination the troublesome constipation, frequently alternating with diarrhœa, so often accompanying chlorosis, will be entirely obviated; the bowels will resume their healthy action, in consequence of their peristaltic motion being improved, and the lacteals and absorbents being aroused to increased action, will seize upon the metal and rapidly assimilate it. The combination of strychnia with iron will also tend to check that excitability which manifests itself under so many and varied forms in this disease, and will correct that lassitude which is one of the characteristics of this malady. In illustration of what I have been asserting, I shall subjoin the account of a case which I had ample opportunity of watching and absolute control over, trusting that the details may not prove uninteresting.

The patient, a young lady, aged 17, had been for some months declining in health; she had a slight husky cough; total loss of appetite; great palpitation of the heart on the smallest exertion; and was pallid in the extreme; but she had not the peculiar *greenish yellow* of chlorosis; it was rather the washy look seen in cases of excessive hemorrhage,—with all this she was not at all emaciated, but, on the contrary, quite plump. Her family were in great tribulation about her, as some of her relatives had died of consumption, and the young lady herself was convinced that she had disease of the heart, from the pain she suffered almost incessantly in it, and the fearful palpitation which arose on the smallest exertion. Several physicians, both in Dublin and elsewhere, had examined her, and some feared there was incipient valvular disease. Sir H. Marsh had, however, given a decided opinion that the derangement was solely functional; and, after the most careful and repeated examinations, I came to the same conclusion, although the following peculiar symptom led me, for some time, to fear a threatening of disease of the mitral valve. When the heart's action was at all excited, its sounds got so tumultuous and mixed up, that it was impossible to discriminate one from the other; but when it was comparatively tranquil, by placing the stethoscope over the apex of the heart, one could hear, amid the irregular pulsations and clicks of that organ, a prolonged musical note, apparently synchronal with the first sound. There were also marked venous murmurs in the jugulars, especially in the right one. But as the case progressed to a cure all these abnormal sounds first diminished, and then ceased altogether, thus proving them to have been only due to functional derangement. Before coming under my care this lady had been taking chalybeates abundantly, and in every variety of combination with tonics. She had taken, among others, a quantity of valerianate of iron, but without any apparent amendment. I at once put her on strychnia and iron, which, in this case, I employed as follows:—One grain of strychnia was dissolved in two minims of sulphuric acid, added to thirty ounces of water, in which one drachm of ammonio-citrate of iron had been dissolved: the whole was then placed in a gazogene, and charged with carbonic acid. The dose was one wine-glassful daily immediately before lunch. The amendment commenced before the end of the first fortnight; the bowels, that had been always obstinately constipated, acted now of their own accord; the want of appetite, which had actually amounted to a disgust for food, disappeared; the colour returned to the face; the heart ceased to beat irregularly, and at the end of three months, there was not a trace of the former delicate sickly appearance.—*Dublin Quarterly Journal, Feb.* 1858, *p.* 47.

20.—ON CHOREA.

By Dr. Thos. Addison, Senior Physician to Guy's Hospital.

[The case which Dr. Addison takes as the text of his clinical lecture is that of a

boy aged eleven years, of delicate strumous habit, afflicted with hemiplegic chorea. Dr. Addison was particularly careful to listen to the action of the heart, and to examine the state of the skin, for reasons explained below.]

Now, whenever I see a young subject the victim of chorea, I always suspect that it has had its origin in rheumatism. I felt this boy's skin to discover if he had that sweaty surface, so characteristic of rheumatism. I listened to the heart, and what did I find? Loud mitral bruit. And what do we learn in going over the previous history, as noted by the clinical clerk? We find that about three years ago he had rheumatism? and here I may tell you, that you will often find, under the name of severe "growing pains," that you have had, in point of fact, a veritable attack of rheumatism. Are we to believe this mitral bruit was the result of rheumatism, or not?

Believe me, rheumatism is a very eccentric disease; I know none more so. There is no disease, perhaps, of which we know really so little as rheumatism in its pathological essence and nature! An old physician of considerable experience was asked, What is the cure for rheumatism? His answer was laconic: "The cure for rheumatism is—*six weeks!*" In other words, rheumatism must be let cure itself. I have cut rheumatism and rheumatic gout short in less than half the time with colchicum, or the powdered cornus and sulphate of magnesia, and other things; but I am not so certain that cutting rheumatic gout short by potent measures is quite the same thing as curing it. Let us, however, at all hazards mind the heart in these cases.

Rheumatism is a queer or eccentric disease, I have said. Now, it is my belief that rheumatic disease, whatever it is, *sometimes attacks the skin alone.* It is my firm belief that it sometimes attacks the heart alone. I know the rheumatic skin well; and I am satisfied also about the ravages committed by this so-called rheumatic inflammation in the endocardium and pericardium, and that, too, without any pain to attract attention. I see the rheumatic skin; and when I do, I almost with certainty predict rheumatism, which is sure to supervene. One may sometimes find the heart inflamed, by itself, but you will do well to look out for rheumatism in the joints and their synovial or ligamentous tissues. This pericarditis is of a marked kind, with no pain about the heart.

But you say, What has all this to do with chorea? Well, what the relations are is not clearly made out; but that there is a connection or relation is perfectly evident. If we look at it in this way, we find, for instance, in acute endocarditis, the patient's manner is often very remarkable, more so than in pericarditis; he may be even quite delirious or labouring under decided cerebral complications.

Some ability and ingenuity are shown by Dr. Kirkes and others in tracing certain clots or shreds of fibrinous matter, as washed from the endocardium into the brain, causing irritation there. On the continent, I find they look on the matter in a less mechanical way, and they say a poison—say, like that of some other serous effusions—is carried to the brain from the rheumatic deposit in the endocardium. I am afraid we have too many analogies in pyæmia and other affections to give stability to this hypothesis.

There are several curious associations, I have said, between the brain and heart: epilepsy, for instance, affects the heart. Sometimes a fit of epilepsy extends itself in a violent tumult of the heart. I was consulted some time ago by a gentleman—a manufacturer at Huddersfield, or somewhere down there—for some curious functional derangement of the heart. I told his family doctor it was epilepsy of the heart; and I believe my friend thought I did not know what I was saying, and smiled at me; but the epilepsy of the heart, with these curious fits of unconsciousness, he could not understand; and how puzzling they are you will find when you get into private practice; so that you cannot give too much attention to them. Well! these anomalous fits of unconsciousness and tumultuous palpitation ended, nevertheless, in regular fits of epilepsy—some of the most marked, perhaps, ever seen. I do not pretend to explain how this is brought about: I only know the practical bedside fact. The relations of the fit in epilepsy itself are very peculiar; but emotional influences will produce palpitation of the heart: and, I suppose in some such way, epilepsy produces it as a sort of first of "three warnings." Emotional influences of fright will cause chorea; in fact, it is the most common of all causes of the disease. A dog runs after a child; a ghost story is told by a foolish

nurse; a house takes fire, and a child is exposed to danger; the child, perhaps, is seized with chorea: some horrible agitation is set up in the emotional (or central) parts of the brain, and chorea fits are the result. The complication or connexion of chorea and heart diseases is so common that I always look for it. See in that case of gout, on the other hand, in that poor woman in the other part of the ward, you can scarcely tell it from rheumatism; she has renal disease, with gout in her foot; but her heart is perfectly free, and, in all probability, will continue free. How curious these peculiarities are!

Yet gout and rheumatism are pathological first cousins; but why does one affect the heart, the other not? I cannot tell you. Well, we gave this boy a mild mercurial first, to set all right in the *primæ viæ*, and we shall follow that up with the sulphate of zinc, in which I have great faith as a remedy in chorea. At Guy's, at least, we have not yet hit on any thing equal to it.

These poor patients with chorea are often very ludicrous, but very distressing to observe. I have seen four or five deaths from the excessive exaggeration of the chorea symptoms; like lizards or eels, such patients are contorted into a myriad of forms; they glide and twist and tumble about the floor and out of bed or into the fire! I have known chorea to begin with pregnancy, and go on increasing as the poor big-bellied woman got bigger and more unwieldy, and only yield when the uterus became empty again! Dr. Hamilton once thought purgatives cured chorea; but I do not believe this is invariably found. Sulphate of zinc or oxide of zinc is the remedy we have made out as most valuable at Guy's. I have known a patient take of sulphate of zinc (not oxide, mind) so much as eighteen grains four times a-day. My attention was once drawn by the late Dr. Chambers, to a peculiar cast of countenance such patients acquire who are taking these very large doses of zinc: you know, of course, the dark tint or tinge produced by nitrate of silver, the dark line of the gums by lead, &c. We were attending a patient for another disease altogether, and though Dr. Chambers could not describe what it was, he said, to some one in the apartment, "Why, you are taking zinc, are you not?" and it turned out that he was. The nearest idea I can give of the zinc complexion of face is, that it is destitute of the freshness and cherry redness of rude health, and the skin of the face assumes a glossy sameness of tint very like pewter; in fact, Dr. Chambers knew the "pewter face" very well; it requires the light to fall in a particular direction, and then you will see it: the hint may be of use to you. We will now say a few words about the patient in the bed No. 20. He has been in the habit, he tells us, of carrying heavy loads on his head; this, I need not say, produces a strain on the muscles about the neck, and pressure on the veins. Well, he has had fits of unconsciousness, and now has excessive pain of a neuralgic character in his limbs. We had a man not long since under care, you recollect, with what I called "*ligamentous rheumatism*." I have seen more than once this sort of ligamentous rheumatism attacking the delicate ligaments, the odontoid, and others of the articulation of the axis and occipital bone, and others of the axis and atlas; in one case, a boy, it threatened to end in universal paralysis, as the thickened membranes no doubt pressed on the medulla oblongata, producing a somewhat common disease, myelitis of the medulla oblongata or chord, or perhaps mechanical pressure. In a woman with the same disease, I verily believe we saved her life by keeping the head, almost in splints, perfectly quiet. We will adopt the same plan in this poor man; we shall support him and prescribe cod-liver oil and tonics, and you will see the result.—*Med. Circular, Dec.* 9, 1857, *p.* 277.

21.—ON SOME OF THE PREVALENT ERRORS IN RELATION TO THE PREDISPOSITION TO HYSTERIA.

By M. Briquet.

M. Briquet believes that most writers have been indebted more to their imagination than to the observation of facts for the pictures they have drawn of this *disease.* It has been attributed by most of them either to unsatisfied sexual *desires or to excessive* excitement of the uterus and its appendages, and a fanciful

etiology to correspond has been invented. The object of this paper is to show that these and other preconceived ideas have no solid foundation in fact.

1. The *hysterical constitution*, about which so many positive assertions have been made, has in fact no existence—the affection occurring in women having the most opposite external appearances. The author examined 425 cases of hysteria in this point of view: of these, as regards height, 127 were tall, 168 medium size, and 106 short: as to strength, 99 were strong, 36 medium, and 26 weak: as to flesh, 194 were stout, 106 medium, and 92 thin and spare: as to colour, 220 were fair, and 164 dark, 27 having the hair light, 39 black, 177 light chestnut, and 188 deep chestnut. In 168 the face was pale or brownish, and in 174 fresh coloured. Thus it will be seen these were the ordinary varieties met with among women in general.

2. The *temperament* is also various enough.—The following is the classification M. Briquet made of 383 cases. In 143 it was lymphatico-sanguineous, in 125 lymphatic, in 91 nervous or lymphatico-nervous, in 12 bilious, and in 11 sanguineous. These are evidently very much the proportions that are found in females of from 15 to 30, part inhabitants of the country, and part of the towns, as was the case with these. At all events, there is no temperament that can properly be called hysterical.

3. *Moral Disposition.*—That which is not discoverable in the physical constitution of hysterical females is, however, very evident in their moral disposition. So much is this the case, that of 430 cases occurring to the author, not more than 20 at the utmost have not manifested it. The characteristic of this is marked *impressionability*, foreshadowed in childhood by great timidity, excessive susceptibility to blame, and a disposition to shed tears easily.

4. *Mode of Life.*—Another of the axioms that has been laid down as undoubted, is that hysteria is the prerogative of the wealthy and luxurious, and that poverty is a security against its occurrence. It is a complete error; the common people being the subjects of hysteria in almost a double proportion to the other classes. At a particular epoch M. Briquet visited all the female patients in the medical and surgical wards of La Charité, with the exception of those suffering from epilepsy, apoplexy, insanity or delirium. The number amounted to 203, and of these 65 were hysterical (38 with convulsive paroxysms), 49 were impressionable, and 89 only were neither hysterical nor impressionable. Thus, among the common people there was 1 woman in 5 who had hysterical paroxysms, and 3 out of every 8 were the subjects of hysteria. So far from being exaggerated, the statement is rather below the truth. But where is the practitioner who meets with 3 cases of hysteria among 8 of his private patients? According to the experience of many M. Briquet has consulted upon the subject, there is about 1 in 8 or 10 in the easy classes of society, not alluding to the very highest. The charms and simplicity of a country life, too, have been sufficiently praised, and nervous diseases have been said to be the almost exclusive affliction of civic life. M. Forget, in 1847, somewhat startled this belief by showing how frequently hysteria occurs among the simple Alsatian peasantry. M. Briquet has obtained cognizance of the place of abode and of early education in 324 cases of hysteria, and of these 168 were town-born and bred, and 156 from the country—the majority of these latter having in childhood laboured in the fields. In the case of 42 of these country girls their mothers had been hysterical, 29 suffering from paroxysmal attacks. Professor Lebert of Zurich also assures the author that hysteria is just as often seen in the poverty stricken cantons of Switzerland, as in the most flourishing ones. A too tender and luxurious education has been assigned as a predisposing cause; but of 81 cases of hysteria occurring before the age of puberty, in 21 the harsh treatment they had been subjected to was the principal cause of the disease. A third portion of the author's collection of cases had been submitted to ill-treatment or privation during childhood. In place of a tender education being assigned as a predisposing cause it would be more just to thus stigmatize a harsh one.

5. *Continence* has been stated by many authors as an unnatural condition, predisposing to hysteria; but when it is remembered that the majority of cases occur between 12 and 20, we naturally ask at what age it becomes unnatural, as also for the explanation of the occurrence of the disease in 86 children under 12 years of age. Various authors since the time of Galen have deplored the fate

of widows, as the necessary victims of hysteria; but in point of fact their solicitude has been little needed, insomuch as among 375 cases collected by Landovzy only 12 of the subjects were widows, as were only 14 in the author's own 430 cases, *i.e.* 26 in 800 cases, or 1 in 30. Of the author's 14 cases, too, in 6 the hysteria appeared on the day of the husband's death, and in 4 during the first month after it, and should surely with more probability be referred to moral emotion. Hysteria has been said to be, on the one hand, common among nuns, and, on the other, rare among women who give free vent to their sexual desire. But in point of fact it is rare in convents, and is chiefly found in those in which there is great fasting and maceration. The reverse position so strongly maintained by authors may also be disposed of. Thus of 300 hysterical females above the age of 15, 139 were married or kept women, and among them had 367 children, not counting miscarriages. Among the 161 remaining, very few resigned themselves to continence. At the Lourcine, where syphilitic workwomen and servants repair, among 424 patients, 169 were hysterical. As to prostitutes, of 197 applying to St. Lazare on account of syphilis, 106 were hysterical, 28 very impressionable, and 65 neither hysterical nor impressionable. It results from all this that continent women are rarely hysterical, those who do not observe continence are frequently the subjects of hysteria, while those who pursue the extreme of incontinence are the most liable of all. The reason is obvious. Among these different classes of women, the first lead peaceable lives, the second have much to go through, while the last are a prey to frequent and violent emotions. Next we may consider the effects of marriage on hysterical women, which, to judge from the statements made, have been truly remarkable. But among M. Landovzy's, and the author's 800 cases, in only 29 instances did decided advantage follow marriage, notwithstanding the complex character of the modifications ensuing upon this state.

6. *Menstruation and Affections of the Uterus.*—This class of influences has been raised to the highest rank by those writers who are determined at placing the seat of hysteria in the uterus. 1. This has been supported by the supposed effects of normal or abnormal conditions of the menstruation. From the author's observations, however, made on 411 hysterical women, in but 136 had there been any derangement of the menses. Of 237 deliveries of hysterical women in but 12 were there any convulsive paroxysms, some of which too might have been examples of eclampsia. 2. According to authors it is common to observe hysteria in affections of the uterus. Now these diseases are exceedingly common, and the connexion ought to be easily demonstrable. But this is not the case, for Landovzy and other partizans of the opinion are able to collect but some 40 cases of affections of the genital organs giving rise to hysteria—few enough as compared with the thousands of cases daily occurring. Practitioners, moreover, having much to do with the various female diseases entirely deny such connexion.—*Union Medicale.—Med. Times and Gazette, Oct.* 31, 1857, *p.* 458.

DISEASES OF THE ORGANS OF CIRCULATION.

22.—PERMANENT PATENCY OF THE AORTA WITH ENDOCARDITIS.

By Dr. Corrigan, Physician in ordinary to the Queen in Ireland.

[The case was that of a labourer previously in good health, but two months since being exposed to the wet a whole day, he was attacked with cough and occasional palpitations. Seven years ago he had an attack of rheumatic fever, and was then cupped and blistered over the heart, but from that time till lately he continued well. On admission into hospital, debility and fits of angina were the prominent symptoms. The action of the heart was very weak, and slight œdema of the legs appeared.]

The symptoms of permanent patency were well marked, and I need only briefly recall then. They were, extensive dulness on percussion over the precordial region, corresponding with the increased size of the heart; double bruit *over the middle* and lower sternal region; single bruit in carotid and subclavians,

with well-marked fremissement in these vessels in both sides of the neck, best felt by laying the thumb longitudinally in the supra-clavicular space over the subclavian arteries, where visible pulsation was also most strongly marked.

The first instructive point in the case is, that we are able precisely to mark the dates of the two pathological states in the heart. The older deposit of ligamentous tissue in connexion with the valves, we can have no doubt, took place seven years ago, in the attack of rheumatic fever; and we learn from it how little may mere mechanical alteration, when not of great degree, interfere with the action of the heart, and even long-continued bodily exertion. In this case, for seven years, the man followed the occupation of a labourer, and his able muscular development fully bore out his own statement, that during that long period he had suffered no inconvenience. I recollect an instance of this disease, in which the person labouring under it was the medical officer of an extensive country dispensary, the laborious duties of which he continued to discharge for fifteen years, with very little inconvenience, and eventually died from another cause.

When the endocarditis, however, in our patient's case, which had been hanging over him, probably, from the period of his wetting, set in with full intensity on the 14th instant, then came with it an attack of angina, and suddenly weakened action of the heart; and under these repeated attacks, with a continuing weakened action of the heart, he at length sank, and died after seventeen days.

We thus from this case learn this important lesson—that in the sudden exacerbations that will sometimes occur in valvular diseases, we have to deal with some vital derangement, rather than with the mere mechanical defect. The mere valvular defect in the case before us has undergone no change; but on endocarditis setting in, arising partly from the wetting, but excited also by the previously existing morbid deposit, this vital derangement, added to the prior mechanical defect, was sufficient to cause the alarming symptoms under which the patient sank. Endocarditis is at all times a most dangerous and suddenly-depressing disease, but the more so when engrafted on previously diseased tissue. It may be asked, why did the action of the heart become suddenly so weak, and remain so notwithstanding all the stimulants exhibited, although its muscular tissue seemed healthy as usual. This phenomenon appears to me to be in accordance with what we observe of muscular tissue in analogous instances. When the pleura costalis is acutely inflamed, the intercostal muscles will not act. When the peritonæum is inflamed, in most cases the muscular fibres of the intestines will not propel their contents; and when a joint is inflamed, the muscles in connexion with it will obstinately refuse to act, no matter with what efforts the patient may attempt to command them. Thus it is, I believe, where the lining membrane of the aorta or of the left ventricle is acutely inflamed. The muscular fibres of the left ventricle will not act with their accustomed force; and if the inflammation be sudden and acute, and over a great surface, as in this case, involving aorta and lining membrane of ventricle together, the action will become so weak as to cause syncope and death.

What are the lessons as to treatment that we learn here?

1st. That no matter what may be our opinion of the extent of endocarditis, we must meet the depression with stimulants and opium, and particularly with a full anodyne at night; and next, that if we can obtain a rally, we shall as soon as possible, superadd local bleeding, blistering, and the use of mercury, to check the effusion of lymph, and to promote the absorption of what has been poured out.

In connexion with the treatment of pericarditis and endocarditis in the sub-acute stage, I have now a few observations to make on one of the most important agents in their cure—namely, rest, and abstinence from stimulants.

If a joint has been inflamed, a patient is quite satisfied, because he sees the inflamed joint before him, and because the part is endowed with animal sensibility, to keep it at rest for weeks or months. He understands perfectly that if he do not, deformity, and perhaps disorganization, will be the result; but the necessity of the same rule does not often come sufficiently forcibly to either patient or physician in convalescence from endocarditis or pericarditis, because the part affected is out of sight, and is not endowed with animal sensibility; and thus, after perhaps a short time, patient and physician both become impatient, and instead of rest and mild

nutrition, tonics, wine, strong food and exercise are had recourse to, and with the naturally to be expected bad results. Remember how long it will take to bring round an inflamed joint, even when we can give it perfect rest. Remember that we can in no case give the heart perfect rest, and that it is the more necessary on that account to give it as much as we can. Let your patient lie for weeks on a sofa or bed, in convalescence for pericarditis or endocarditis. Always bear in mind that you have, as it were, an inflamed joint within to deal with. Abstain from stimulants, or give them most sparingly. Keep the action of the heart as quiet as you can during the day, and give an anodyne every night, and you will see recoveries that will occasionally surprise you.—*Dublin Hospital Gazette, Jan.* 1, 1858, *p.* 2.

23.—OBSERVATIONS ON HÆMOPTYSIS.

By Prof. Trousseau.

These observations by Professor Trousseau chiefly relate to the diagnostical and prognostical value of hæmoptysis. He observes that on finding an individual spitting blood, the first idea that presents itself is the existence of pulmonary tubercle; but if we note all the cases that present themselves, not in private but in hospital practice, we shall find the hæmoptysis as often dependent upon other causes as upon tubercular disease. This statement, paradoxical as it may seem, is quite true when confined to hospital patients.

A form of hæmoptysis that is rarely met with in hospitals is due to *hemorrhagic deviations*. We meet with women who, without suffering from any notable disturbance of menstruation, but who are the subjects of nervous symptoms, spit blood frequently in considerable quantity. Neither the symptoms nor attentive exploration of the chest, indicate any affection of the heart or lungs; and when the period of menopausis arrives the hæmoptysis becomes arrested, and does not return. Other women spit blood during pregnancy or lactation, and cease doing so when these conditions are terminated. These nervous women are also sometimes the subjects of menorrhagia, seeming to be under the influence of a hemorrhagic diathesis; and when the critical discharge does not take place by the uterine mucous membrane, it does so by the bronchial membrane. Although these hæmoptyses are not of the importance that might be supposed, and may be reproduced at longer or shorter intervals during several years, it must be borne in mind that this frequent repetition may induce a congested state of the respiratory apparatus, during which, even a slight accessory cause may give rise to a more or less dangerous phlegmasia. Independently of abnormal circumstances, we may meet with hæmoptysis occurring, so to speak, as a physiological accident, supplying the place of a natural or accidental discharge of blood, which, from some cause or other, does not take place by the ordinary channel. Thus, in women with obstructed menstruation, it is one of the most frequent forms of *hemorrhage supplementary to menstruation*. It will be readily understood that when with this peculiar disposition of the economy there is combined another dependent upon a local predisposing condition of the pulmonary apparatus, these hæmoptyses are still more readily produced. Under such circumstances, the prognosis of hæmoptysis is far more serious than when it arises from hemorrhagic deviations unconnected with local occasional causes. Here, in fact, the accidents become complicated with the local lesion which has led to these manifestations, just as this itself is necessarily complicated by the fact of the fluxionary hemorrhagic movement, which at each return accelerates the evolution of such lesion.

As already observed, these varieties of pulmonary hemorrhage are rare in hospital practice. The form of the affection, however, there most commonly met with is not hæmoptysis dependent upon phthisis, but hæmoptysis dependent upon disease of the heart. It is not meant by this to declare in an absolute manner that tubercular hæmoptysis is of rarer occurrence than hæmoptysis dependent upon disease of the heart, but only to state that in phthisis, hæmoptysis being in general a transitory condition, occurring early in the affection, the patients do not come to the hospital, while hæmoptysis dependent upon heart disease occurs principally when the disease is much advanced, and consequently, at the period when patients

are obliged to resort to the hospitals. Proceeding to consider some of the points of diagnosis between these two forms, we find that in youth, adolescence, and the early period of mature life, from the sixteenth to the fortieth year, hæmoptysis most generally is dependent upon pulmonary tubercle, and that whether it is met with in hospital or private practice; but after the fortieth year, and still more after the fiftieth, it is no longer, generally at least, a sign of phthisis, but of disease of the heart. There are exceptions to this rule, but they do not invalidate the general truth. In phthisis, bloody expectoration may either precede any other manifestation of the disease, of which it may be considered the earliest symptom, or it may appear in the course of the affection. Laennec indicated its slight quantity as a characteristic, and regarded very abundant hæmoptysis as almost always due to pulmonary apoplexy. But he had little opportunity of observation in private practice. It is true that in general, hæmoptysis is not abundant, but still there are cases in which it is overwhelmingly so, causing death by the sole fact of the loss of an enormous quantity of blood. Hæmoptysis, consequent on disease of the heart, is, notwithstanding, still seldomer overwhelming (*foudroyante*) than bronchial hemorrhage. It may recur fifteen, twenty, forty, or fifty days in succession without at once proving fatal. Of course, when dependent upon the rupture of an aneurismatic vessel into the bronchi, it may prove still more rapidly fatal than hæmoptysis supervening on phthisis. Besides the age of the patient and the progress of the symptoms as elements in the differential diagnosis, there is an important point in regard to the seat of the hemorrhage—viz. that while in phthisis it takes place generally at the bronchial surface, in disease of the heart it is most often parenchymatous, first occurring in the pulmonary vesicles.

As to the question of the characteristics of bronchial and pulmonary sanguineous expectoration, it is said that bronchial hemorrhage is observed under the form of spumous, semi-fluid sputa, resembling blood beat up with air, and having a bright redness, deemed characteristic. The quantity discharged is said to be sometimes very slight, and sometimes very abundant, not being mingled with the débris of alimentary substances or mucosities. But this is far from being always the case, as the sputa may be as viscous as those seen in the first stage of pneumonia, or in pulmonary apoplexy, an appearance, probably, due to slight accompanying inflammatory action, or to the accumulation and detention of blood in the lungs. So, too, we may find the discharges mixed with alimentary substances when the hæmoptysis is undoubtedly connected with phthisis. Stethoscopic signs are often at default, or indicate as much, or even more, the pulmonary lesion upon which the hæmoptysis depends. Generally, at the autopsy of persons who have been the subjects of bronchial hemorrhage, we only find besides the lesions proper to phthisis, redness of the pulmonary mucous membrane, which, indeed, may be due to imbibition. If cavities exist, they may contain a certain amount of coagulated blood, and that usually when vascular ruptures take place within these, otherwise we only find a little blood accumulated in the bronchi.

With respect to pulmonary hemorrhage we may advert to the erroneous term, "pulmonary apoplexy," which has been bestowed upon it, giving, as it does, no idea of the nature of the affection. It occurs in general during the course of an affection of the heart; and at the autopsy kernels of engorgement are found of as deep a colour as the spleen, and as hard as those of pneumonia in its second stage. The tissue of the lung is friable, and presents the granular aspect of hepatized tissue, except that while in the latter the vessels and lobular intersections are visible, the hemoptical engorgement presents a uniform blackish or very deep brown colour. This lesion, which would be better termed sanguineous infiltration, bears no analogy to cerebral apoplexy, the term apoplexy always implying the idea of suddenness and active fluxion, a condition rather belonging to bronchial than to pulmonary hemorrhage, which is ordinarily, to a certain extent, passive. There are, indeed, cases of true pulmonary apoplexy giving rise to sudden death, and characterized by the effusion of more or less blood amidst the lacerated lung. The term apoplexy would be much better applied to cases of active congestion of the lung, a not very rare disease, but which is rarely accompanied by hæmoptysis, properly so called. Gendrin proposes to substitute for the term pulmonary apoplexy *pneumo-hemorrhage*, indicating without ambiguity an extravasation of blood into the tissue of the lungs. As to the distinctive signs in these

cases of pulmonary sanguineous infiltration, the expectoration is generally viscous, sometimes red, and sometimes black, and even deep black. But as in bronchial hemorrhage the blood discharged is also sometimes black, so in the pulmonary it is sometimes spumous, and that especially when it is quickly and abundantly discharged.

While lesions of the heart are the usual causes of pulmonary hemorrhage, contraction and insufficiency of the mitral valve is the most common of these lesions, and especially when, as is commonly the case, it is conjoined with ventricular hypertrophy. These hemorrhages are sometimes very considerable, and may recur three, four, six, eight, or ten times in the course of the disease of the heart; at other times, though rarely, they are slight and transitory, and do not reappear. When the lesion is much advanced, the patients may spit blood for one or two months, and sometimes until their death. The disposition of these hemorrhages is, in fact, to increase in frequency and in quantity with the disease of the heart, an effect of which they are, as it approaches its fatal termination.—*Union Méd.*—*Med. Times and Gazette, March* 27, 1858, *p.* 328.

24.—TINCTURE OF BENZOIN AS A REMEDY FOR EPISTAXIS.

By Dr. B. Fordyce Barker, Professor of Midwifery, New York Medical College.

[The case was that of a delicate child, with disease of the heart following rheumatism. She had had several severe attacks of epistaxis before the one on account of which the author was called.)

The posterior nares had been twice plugged, each time by a distinguished surgeon who had been called in consultation. He represented the present attack as more severe than any she had had before. It had resisted all the remedies which they could apply, and, from past experience with such attacks, he seemed quite familiar with all the ordinary methods of controlling such hemorrhages. He had blown alum up the nostril, applied ice to the nape of the neck, plugged the nostril with lint soaked in a strong solution of tannic acid, but still the h morrhage continued at the rate of 60 drops a minute. She was a feeble, delicate child, extremely nervous, and exhibiting the symptoms of extreme loss of blood to a fearful degree. Her lips were colourless, her respiration hurried and panting, her pulse small and wiry, her surface cold, with great impatience and nervous excitability. I at once began to prepare to plug the posterior nares by means of the sound of Belloc. But my patient, suspecting what I was about, immediately began to protest with violent screams that she would have nothing of the kind done, and no reasoning or expostulation was able to allay the violent frenzy that followed. I have not found the plugging of the posterior nares a particularly easy or agreeable operation even with the best subjects, and in the present case I plainly saw that it would be unusually difficult. For some time past I have been accustomed to arrest the severe hemorrhage resulting from malignant ulceration of the cervix uteri, by painting over the diseased surface the tinct. benzoin co. It now occurred to me that this article might possibly prove equally serviceable in the present case. I injected about a drachm, by means of a small syringe, up the left nostril, the passage from which all the hemorrhage came. For a moment or two she complained bitterly of a severe burning pain in the nose, extending back to the ear, but it very soon subsided, and the hemorrhage entirely ceased within five minutes after the injection was used. I remained with my patient about a half hour, and then directed a teaspoonful of elix. paregoric to be taken, and this to be repeated in an hour if she did not fall asleep. She has had no hemorrhage since, and her general health has improved in the most remarkable manner, under the steady use of the syrup of the phosphate of iron.

As a further illustration of the hemostatic powers of this agent, I may mention the case of a gentleman who had for several years been suffering from internal piles, which had greatly impaired his general health from frequent bleedings.

One very hot morning in June, 1856, I was called to see him on account of severe hemorrhage. I learned, that for several days he had lost a good deal of *blood after his* morning dejection, but this morning it was so excessive as to induce

complete syncope. When I saw him he was still very faint, and there was a constant oozing of blood from the rectum, which was so sensitive that I could arrive at no satisfactory result from physical exploration. With a small syringe I injected into the rectum a half ounce of tinct. benzoin co. as soon as it could be obtained. Its effects were quite striking. He was at once aroused from his syncopic condition, and since that time has never suffered from the hemorrhage. —*American Medical Monthly.—Dublin Hospital Gazette, March* 1, 1858, *p.* 79.

DISEASES OF THE ORGANS OF RESPIRATION.

25.—ON THE ORIGIN AND FORMATION OF TUBERCLES IN THE LUNGS.

By J. L. C. Schroeder van der Kolk. Translated from the Dutch by Dr. Wm. D. Moore, A.B. Hon. Member of the Swedish Society of Physicians, and of the Norwegian Medical Society.

Laennec thought that the origin of tubercles was to be sought in a peculiar matter infiltrated from the blood into the lungs, but which could by no means be the result of local inflammation. This idea has been further developed, especially by Rokitansky, who imagined that the explanation of the origin of tubercles should be found in a general alteration of the blood, in a blood-crasis, of which he assumed certain laws.

The principal characteristic, namely, whereby tubercles in general are distinguished from other matters effused in consequence of inflammation, is found in the peculiarity, that they, especially such as occur in the lungs, have no power of further development, and of becoming organized, as they pass into a state of softening, suppuration, or occasionally into a firmer, hard condition—*cornification*, as Rokitansky terms it—or are converted into a calcareous state; but that no new organic tissue is produced from tubercle. Rokitansky was of opinion, that the cause of this was to be found in a change of the blood, in an original anomaly of the blastema, and that the form and chemical properties of the various exudations should correspond to the primitive morbid changes of the protein matters, and to the anomalous condition of the fibrin in the blood; and thus many a blastema, in consequence of its original nature and composition, should be the cause of its non-development, and should carry in itself the germ of its own destruction.

Rokitansky thus assumes a fibrinous, croupy, tuberculous, albuminous, and purulent blastema, as well as a fibrinous, croupy, tuberculous, albuminous, and purulent crasis of the blood, whence the blastema should be developed of the same nature.

Though I am far from wishing to deny the existence of morbid changes in the blood, which exhibit themselves numerously enough, as well in simple inflammation as in chlorosis and other affections, I can, at the same time, by no means assent to a crases-theory, resting not on certain observed facts, but appearing rather to be assumed *à priori*, in order to explain the particular properties, especially of tubercle, to which I now confine myself—namely, the peculiarity that they are capable of no further and higher development, and also partly their occasional so general dissemination through the body.

Though albumen and fibrin are deposited unchanged by effusion through the walls of the bloodvessels, they still occur as exudations, everywhere in contact with the nutritive fluid, which is almost always acid, and contains more phosphates and potash salts than the serum; but especially with organic constituents and cells, which have a powerful metamorphosing action on these exudations. They are, by absorption, gradually deprived of their water, and now constantly undergo further changes, whereby they become more and more unlike the original combinations of albumen and fibrin, as the latter are separated from the blood.

Hence it immediately appears how dangerous it is, from the nature and form of this altered tuberculous matter, to infer such an agreement with the same ingredients in the blood, and thus to assume an original peculiar blood-crasis.

Rokitansky appears, however, not to assume in this any change in the tubercles,

which he regards as the product of coagulated protein matters, persisting as blastema in the lowest stages of development—that is, in the condition of so-called crudity; this solid blastema it is, therefore, which yields the tubercles.

The view, that albumen and fibrin should be capable of undergoing, even in the blood, such morbid changes as to lose their capacity for further development, is so very much opposed to all ideas of nutrition and assimilation, which still must incessantly go on during life, that we can scarcely imagine existence to continue with the blood so morbidly altered. Yet, if muscles and other organs of the body continue, in tuberculosis, to receive from such blood the matters which are organized to form their constituents, it is difficult to reconcile with this circumstance Rokitansky's statement, that in some cases "every extant minimum of fibrin is separated in a state of tuberculous dyscrasia, in the form of tubercle." As, moreover, this morbid quality is said to communicate itself, after the disappearance of fibrin from the blood (defibrinated condition of the blood), to the albumen, nothing can remain, adapted to nutrition and the maintenance of life of a tubercular patient, in the blood.

Rokitansky further distinguishes fibrinous and albuminous exudations, and even assumes still more numerous modifications of fibrinous exudations, croupy α, β, γ, and tuberculous exudation, which also is said to be formed of fibrin. But if we reflect how difficult it is to distinguish albumen and fibrin—especially after coagulation or solidification—from one another; how the capability of fibrin to be coagulated is modified by a number of various causes, which greater or less tendency to, or capacity for coagulation, plays so large a part in Rokitansky's theory of crases; and, indeed, recollect that chemistry does not yet furnish any means of distinguishing with certainty coagulated fibrin from coagulated albumen; it cannot be maintained, that difference in solidity and colour of different tubercles can afford any ground for hence inferring original morbid changes of fibrin or albumen.

If, in reference to this point, we bear in mind the great variability of the blood during life, this fluid being altered every moment by the taking up of several constituents from the food, by the constant metamorphosis of these substances, through the influence of respiration, and incessant secretion and excretion; while even in the different vessels, in consequence of the metamorphosis of tissue in the nutrition and separation of various parts, it must possess a tolerably dissimilar composition, such a persistent morbid constitution of the fibrin or albumen, or indeed of both, with continuance of life, and of the normal functions of the brain, sense, muscles, and so many other organs as still perform their functions without disturbance, is nearly inconceivable.

Not only the origin of the tubercles, but also, as I have already observed, their varieties, are explained by the supposed difference of blood-crasis. Thus Rokitansky assumes a simple fibrin-crasis, from which grey tubercles are formed, distinguished chiefly by this, that they are capable of passing into a state of condensation, hardening, and even cornification (not a happily chosen expression), and sometimes into one of ossification, or into a calcareous condition, but by no means into softening. Again, we have a croupy crasis, said to give rise to the existence of yellow tubercles, differing from the preceding by their tendency to softening and suppuration, which different terminations are by no means to be regarded as the consequence of a varying degree of inflammation—which may, however, coexist, with them—but as the result of the primitive morbid crases which the fibrin has assumed in the blood. That this explanation is, however, not sufficient to account for the form of the tubercles, Rokitansky himself has felt; and he expressly says—"Still these crases just mentioned are by no means adequate to afford a satisfactory explanation of the nature of the tuberculosis;" he is therefore obliged, he says, certainly to graft on these crases a peculiar tubercular modification.

I must now confess, with all the respect which I feel for the indisputable merits of Rokitansky, that this mode of explanation always brings vividly to my mind Molière's saying about the *virtus dormitiva* in opium. In it sufficient importance is not, in my opinion, attached to the nature of the tissue on which the different tubercles must always occur. Thus, according to Rokitansky, the greyish dried tubercle, the result of a simple fibrin-crasis, occurs chiefly *in the* serous membranes, the pleura, &c.; the croupy fibrous tubercle, which has *a yellowish appearance*, and subsequently becomes softened, arises almost invariably

in the pulmonary cells. They owe their origin, according to him, to a different crasis; while, however, the different natures of a serous and a mucous membrane must produce an important difference in the composition of the matters secreted by these membranes. When, too, the grey tubercle occurs in the lungs themselves, this difference is, I am convinced, explicable chiefly by its situation in the lungs, and the different tissue, as I shall hereafter show, in which it is primarily formed. If, on the contrary, we ascribe the grey tubercles to a simple fibrinous crasis, with a strong tendency to coagulation, the yellow to a croupy crasis, both crases should always co-exist in the lungs, as tubercles of the first kind are constantly deposited simultaneously in the partition walls between the lobules of the lung, and the yellow in the cavities of the pulmonary vesicles themselves; so that fibrin capable of organization is deposited only in the partition walls, while that which is not adapted for organization is deposited in the cavities of the pulmonary vesicles.

The peculiar tubercular form, moreover, cannot be explained by the assumption of a crasis, further known to us, but is rather the consequence of the structure of the part in which the tubercles arise. If a slight local effusion takes place, in consequence of inflammation, from one or more capillary bloodvessels, the effused matter extends around the central point, may locally accumulate, and so, as papulæ or pustules, assumes more or less of the tubercular form—that is, be limited within a small extent; but if the tissue is—as, for example, in the lungs—divided into vesicles and lobules, which latter are mutually connected only by connective tissue and some bloodvessels, the effused matter is restricted within the bounds of the pulmonary vesicles, and consequently must, so long as it has not spread itself as a general effusion, occupying many pulmonary vesicles and lobules, necessarily assume the form of tubercles (tubercula). If, however, the tissue is more connected, if it is not separated into minute subdivisions—as, for example, in the liver or the brain—we much more rarely find small tubercles; but when such morbid productions occur, they are usually much larger, or extended more uniformly into large nodules (knobbles);—a circumstance which cannot well be explained from the nature of a crasis.

Moreover, the situations where tubercles most frequently occur by no means consist with the idea, for example, of a fibrinous tubercular crasis. Thus tubercles are met with, according to the testimony of Rokitansky himself, most frequently in the lungs, the intestinal canal, the lymphatic glands, &c., but most rarely of all in the muscles; as is also sufficiently confirmed by experience. It is, however, more than probable that the muscles are nourished principally by the fibrin of the blood. This fibrin appears to be a somewhat higher degree of oxidation of albumen, and accordingly the quantity of fibrin in the blood agrees with the capacity of the respiratory organs. The more capacious the latter are, for example, in birds, the more plastic is the blood, the more highly developed are the muscles.

The same may be observed in the carnivorous animals, which are distinguished as well by their capacious breathing apparatus as by the powerful development of their muscles. It is also well known that a broad-shouldered man, with a large chest, possesses a comparatively strong muscular apparatus, while in both these respects the man is remarkably distinguished from the woman.

It is, therefore, strange, that while the muscles are nourished chiefly by the fibrin present in the blood, tubercles, arising from a primitive morbid fibrinous crasis, should so very seldom be met with in these organs, exactly where we should expect such a morbid crasis first to manifest itself.

In this theory of crasis, the idea of local inflammation, as a cause of tubercle, is further removed; and nevertheless Rokitansky himself acknowledges that the products of a simple inflammation, without crasis—for example, after local inflammations—agree as simple exudations, and as croupy exudation, which is prudent, with the products of dyscratic exudation, and therefore with the tubercles themselves. Thus even he admits that tubercle is often the product of inflammation.

I therefore cannot see why, in order to ascertain the nature of tubercle, we should be obliged to take refuge in the hypothetic existence of an original crasis, which is not corroborated by any examination of the blood itself, while, as I hope to show, a more accurate investigation of the morphological constituents of the

tubercles themselves affords a sufficient explanation of their peculiar composition and of the reasons why they are not capable of further development.

The question remains, therefore, whether the frequent occurrence of so general a diffusion of tubercles throughout the body should not lead us to assume the existence of some peculiar primitive crasis.

I willingly admit that, for example, in a scrofulous constitution, where tubercles are developed in so many situations, the blood cannot be healthy: but in this case there also exists a disease of the lymphatic system; which exercises such an important influence on the preparation of the blood and the elaboration of its principal constituents. According to the doctrine of crases, however, this affection of the lymphatic system, whereby so many tubercles are developed, should be rather effect than cause. Rokitansky, indeed, supposes the existence of a primitive crasis of the blood, of which the local affections are the result, while tuberculosis is, in his opinion, one and the same disease with scrofulosis. The affections of the glands are, therefore, according to Rokitansky, results of the crasis, and not *vice versâ*.

Moreover, that the general diffusion of tubercles is not satisfactorily explained by a crases theory, has already been shown, as it does not hence appear why in a so-called fibrinous crasis the tubercles should spare the muscles, which ought to be the first organs to participate in the morbid condition of the fibrin of the blood. Finally, the doctrine of crases does not explain why, for example, in pulmonary tubercles the disease commences with the deposition of only a few tubercles, which spread very slowly. If the cause were to be found in a general alteration of the admixture of the blood, these should from the first be formed equally throughout the whole lungs, since the same blood flows through all parts of these organs.

Rokitansky seems to assume increased oxidation as the cause of the tuberculous crasis, at least he says that arterial development of fibrin specially constitutes its principal character, and that continued oxidation leads to the excessive formation of fibrin. Though I readily agree to the last proposition, still the formation of tubercle is scarcely to be connected with these ideas of higher oxidation. And consistent with this, says Rokitansky, is the fact, that in a so called phthisical constitution the lungs are not smaller, as has, according to him, incorrectly been supposed; but in this case the lungs are in fact more voluminous, as the apparent narrowness of the thorax in its antero-posterior diameter is amply compensated by its greater length. How the well-known results with the spirometer, which prove the very opposite, can be reconciled herewith, I cannot see; the capacity for respiration in those predisposed to phthisis, in a so-called phthisical habit, seems to be much less, so that even from this diminished capacity of the lungs, indicated by the spirometer, a strong predisposition to phthisis may usually be inferred, which capacity subsequently undergoes a steady decrease with the commencement and progress of phthisis. In like manner it is generally acknowledged that a capacious broad chest, with great capacity of the lungs, is the best safeguard against phthisis and tuberculosis. Lehmann explains the increase of fibrin in the blood in pneumonia and pleuritis, on exactly opposite principles, by diminished access of oxygen, the fibrin in these diseases being want of oxygen not sufficiently metamorphosed and burned, or rather not sufficiently reduced to products of lower composition. As, however, this increase of fibrin is not the constant result of deficient access of oxygen, as in asthma, emphysema, and cyanosis, we must conclude that the irritated condition of the lungs, both in these affections and in consumption, has a very great influence on the composition of the blood, though we cannot fully explain its mode of action.

In like manner, Rokitansky endeavours, on the other hand, to prove the existence of a crasis or peculiar disposition of the blood, by diseases or changes—such especially as those in which the blood is said to be more venous—which should make it unfit for the formation of tubercle. Although I willingly admit that for the occurrence of inflammation and effusion of fibrin a certain composition of the blood is required, and that these plastic effusions or inflammations may be in a great degree promoted or impeded by the composition of the blood, yet I can by no means agree to all the examples adduced by Rokitansky as grounds for this *opinion*. Thus he says, that in advanced pregnancy, tuberculosis, already existing, *is arrested in its progress*, and the commencement of tuberculosis is prevented, in

consequence of the occurrence of greater venosity of the blood, the result of the diminution of the thoracic cavity. It has, however, been shown by the experiments of Andral and Gavarret, that while, in women, the quantity of exhaled carbonic acid, from the time of the establishment of the menses, in the fourteenth or fifteenth year of life, to the termination of this period, is constantly the same, and is much less than in man; during pregnancy, as well as on the cessation of menstruation, the quantity of exhaled carbonic acid is remarkably increased—a circumstance which can certainly not take place without a correspondingly increased assumption of oxygen; whence precisely the opposite result should follow—namely, that during pregnancy the tendency to tuberculosis ought to be increased, because respiration is then more vigorous. I believe that the impediment to the formation and spread of pulmonary tubercles in pregnant women is rather to be accounted for by the transference of increased activity and excitability from the lungs to the uterus, just as, on the other hand, the non-appearance of the menses, and the consequent diminished activity of the uterus, in consumptive girls, is a very unfavourable sign.

It is not, however, my object to follow Rokitansky's theory of blood crases through all its details; this would lead me too far. I will, I repeat, readily admit that the composition of the blood has a great influence on the origin of various diseases; that the blood, in phthisis, typhus, and scrofula, may deviate more or less from the healthy condition; but I doubt that these abnormities of the blood are always primary, and especially that the peculiarities of pulmonary tubercles can be explained by such a degeneration of the blood as should render its chief constituents incapable of further development. If the lung is once affected to a certain degree, if the lymphatic system has undergone more or less morbid degeneration, the preparation of healthy blood can no longer take place, and opportunity is given for the increase of pulmonary tubercles, or for the occurrence of chronic inflammation; but we cannot by any means hence infer the existence of primary crases, which should again be as easily distinguished, as we have various kinds of tubercles, the difference of which is more satisfactorily explained by the nature of the tissues and by the situation where they occur, than by a supposed crasis.

If, in the first place, we consider the difference which exists between pulmonary tubercles, we shall find that it by no means confirms the idea of an original crasis. Rokitansky himself divides pulmonary tubercles into interstitial and infiltrated tubercles. The first are described as forming in the interstitial tissue, between the most minute lobules and pulmonary cells, and between the wall of the pulmonary cells themselves, and in this manner compressing the latter. The infiltrated are said to be deposited in the very cavity of the pulmonary cells.

On this I would first of all observe, that the so called interstitial tubercle never occurs between the walls of the pulmonary vesicles, but only between the lobules. The walls of the pulmonary vesicles, even when these are more or less filled with tubercular mass, always present the appearance of very thin membranes, on whose surface tubercular cells and altered epithelial cells are situated; but never is this matter deposited between the walls of the proper pulmonary vesicles. These interstitial tubercles occur only between the lobules, almost always in company with the other kind, the so-called infiltrated tubercles. Scarcely ever do we see tubercular mass between the lobules alone, compressing the neighbouring pulmonary vesicles; the adjoining air vesicles are always at the same time filled with tubercular mass (infiltrated). The same process, the same effusion, produces between the lobules interstitial, and in the cavity of the vessels, so-called, infiltrated tubercles; where these interstitial tubercles appear alone, it is, as we shall see, in consequence of a primary disease of the lymphatics.

In order to perceive this with certainty, a fine injection of the pulmonary vessels is very useful, as these between the lobules form an entirely different and much coarser vascular net-work, consisting of more capacious meshes, and differing so very much from the greatly finer and denser web on the walls of the air-vesicles, that they can be discriminated at first sight. The interstitial tubercles, however, are grey, according to Rokitansky, the infiltrated yellow. This difference is said to arise from the interstitial being the result of a simple fibrin-crasis, the yellow of a croupy crasis. But how is it possible that these crases should always occur

simultaneously, and that the first crasis-matter should invariably have a special predilection for depositing itself between the lobules, and the second for placing itself in the pulmonary vesicles? If, however, we examine the structure of the lungs more accurately—for example, in a portion of the lungs in which the capillary vessels are filled merely with a yellow matter, we find everywhere between the lobules, not only black pigment, but also that the branches of the pulmonary artery, passing towards and between the pulmonary vesicles, are more or less covered with black pigment. This black pigment, which may morbidly increase, gives to the tubercle a grey colour, which, therefore, is not derived from an original and distinct fibrin-crasis, but simply from the admixture of this colouring matter. This pigment seems to be adherent specially to the lymphatics, in consequence of which the latter, in an adult lung, as well as the bronchial glands, appear to be black.

The yellow tubercle passes, according to Rokitansky, at one time into a state of softening, at another into calcification. This calcification arises, in my opinion, from a peculiar affection of the lymphatics between the lobules, consequently in the grey tubercle, chronic inflammation of which is usually followed by calcification. Thus we meet this calcification also constantly in the bronchial glands, if the process occurs in the lungs themselves. Thus, too, mesenteric glands filled with chalk often occur in the mesentery, of which I possess, in my collection, specimens with lymphatics injected with quicksilver.

Hence we see that the termination in calcification is not to be ascribed to a peculiar property of the blastema, but to the peculiar tendency of lymphatics to undergo this process.

But the property of tubercles, also, of not undergoing further development—and this is a principal point, which we must examine somewhat more closely—is not the result of a primary morbid affection of the albumen or the fibrin of the blood, but of the particular situation where, and of the manner in which, the tubercle is developed.

If effusion takes place in a lobule, it extends at the same time to the interlobular space; that is, the effused matter does not confine itself to the cavity of the pulmonary vesicle, but the interspaces between the lobules are simultaneously more or less filled with the exudation. The exudation is here, however, in contact with connective tissue and vessels, and development, it is true, to a certain extent, takes place; that is, we see the cells in this situation become lengthened, and assume more or less of a filamentary form, which never occurs with the tubercular matter in the pulmonary vesicles, the simple reason of which I shall presently more accurately examine. Now, if the cause of the want of development were to be found in an original blood-crasis, it would follow, that a preceding tuberculous crasis should be required for the formation of tubercular matter in the pulmonary vesicles, while the effusion simultaneously occurring between the lobules should yield healthy fibrin, which is absurd.

In order, however, plainly to indicate the reason why tubercular matter deposited in the cavity of the pulmonary vesicles never attains a higher degree of development, it is necessary previously to investigate the properties which the pulmonary vesicles, and the epithelium lining them internally, have in common with all other secreting organs.

All secreting organs, by which matters are separated from the blood, are covered internally with a peculiar kind of epithelial cells, which cells are especially to be found in the ultimate terminations or vesicles, and sometimes also on the inner walls of the excretory ducts. These cells possess the peculiar property of multiplying themselves when they come in contact with serum effused through the vessels; of swelling up, and usually, finally, taking up a constantly increasing amount of fat, while the cell walls become thinner, of bursting or disappearing, and pouring out their contents as a secretion. They are thus of the greatest importance in determining the nature of the secretions. These cells are situated everywhere on the membrane investing the secreting organs internally, and constitute, as has been shown, particularly by Carpenter, the most efficient part of the organs. They everywhere fill, nearly entirely, the follicles and mucous crypts, the ducts, and vesicles of the salivary glands, the tubuli uriniferi, the lacteal ducts, and form the *principal constituents* of the liver, in which organ the entire series of changes which

they undergo in their transmutation from smaller cells to large hepatic cells, finally pouring out their contents as bile, has been admirably explained by Carpenter.

The same process had previously been described by Frerichs, with reference to the synovial membranes. These are invested with proper epithelial cells, which are constantly rubbed off by friction during the motion of the joint, swell up, and finally (according to Schrant, through mucine metamorphosis of their contents) are dissolved in the articular fluid, whereby the mucus peculiar to this fluid is prepared. If a joint is not kept in motion, this abrasion of the epithelial cells is diminished; but the articular fluid now also becomes more watery, and contains less mucus, as Frerichs has shown by comparative analyses. In consequence of this the joints of patients who have long been bedridden become at length stiff and rigid.

In the same manner, too, is the milk formed by the epithelial cells of the mammary glands, which first take up fat, and enlarge; in the commencement of secretion exhibit themselves as large cells filled with fat globules; and, subsequently, when suckling is completely established, are dissolved in the glandular vesicles, the contents of which are now discharged as milk or suck, as has been satisfactorily demonstrated by Lammerts van Bueren, and by Donders.—*Dublin Hospital Gazette, Feb.* 15, *and March* 1, 1858, *pp.* 60, 76.

26.—ON CHRONIC PHTHISIS.

By Dr. Edward Smith, LL.B., Assistant Physician to the Hospital for Consumption, &c., Brompton.

Tubercle is not the first step in the disease. I venture to affirm that tubercular deposit is not the first step in chronic phthisis, on the following grounds:

I. That whatever tubercle may be, it must be due to anterior causes, and there must have been a period prior to the deposition of tubercle, in which those causes acted.

II. It is universally admitted that a predisposition to phthisis exists and is demonstrable; and so long and widely has this been known, that non-professional people are enabled to indicate its existence. Then as in those persons having this predisposition there is a greater probability that they will have the disease than that they will not, or than that others will have it, there must be a true relation between that state and the disease. Now, assuming that tubercle is the starting point of the disease, as they have not then the disease they have not tubercle; but as they are persons in whom the disease—that is tubercle—is most likely to occur, they are in the state which precedes tubercle, that is, in the state in which the causes are acting which must precede and which produce tubercle. I know well that the difficulty lies in proving a connexion between these two states, which is either a necessary antecedence to, or a cause of, the latter; and it is to overcome this that I especially direct attention; but it will suffice if I show that that early condition is a necessary antecedent to tubercle, without being called upon to prove that it is a cause of tubercle, or that tubercle is its necessary consequent.

Evidence of first stage. I consider that this connexion is proved from its own evidences absolutely, and from those contrasted with the evidence which tubercle in its very early condition affords. Its own evidences are shorter breathing, less breath motion, feeble and shorter inspiratory sounds and particularly the vesicular sounds, and this may be more or less general over the whole of both lungs. Expiration quick, forcible, and perfect. Deep inspiration may be effected, but it is not effected by the patient unless at least his attention be directed to the defect, and more commonly not until he has given attention by repeated efforts. This may be readily proved by the inspiration. The quantity of tidal air is often diminished in ordinary breathing. The general indications of body will be those of atonicity, and possibly the rate of pulsation and respiration will be increased, and the complexion and condition of system evince a state of mal-nutrition. There will probably be flattening of the chest, depending upon original conformation or upon the progress of the disease. The same remark will also apply to dulness on percussion. Cough may or may not exist, as also some hæmopty-

sis. The essence of the whole is less respiratory action; and as this varies in degree, extent, and duration, so will the other signs vary.

The evidences of the disease, when tubercle is deposited in its very early period, are the same, but with the addition of those of the existence of obstruction at certain defined places. Hitherto there was lessened action, but no localized obstruction, but the deposit of a matter more or less solid offers obstruction to the entrance and exit of the air in the precise spot in which it is placed, and then by extension as the quantity increases. This is evinced by wavy or jerking respiration and prolonged expiration. In addition, the new substance will displace a quantity of air, and then, by its own heavier specific gravity, cause the resonance on percussion to be less clear.

Thus the essential difference in the two stages is, that in the first we meet with simply lessened action and its consequences, whilst in the second there is added obstruction and solidification; and these signs are sufficiently diagnostic, except perhaps at that short period when the two meet, or the first passes into the second stage. The connexion between the two is proved both by the evidences of the first and the continuance of them into the second. We are accustomed to attribute the signs existing with tubercle to the tubercle alone; but this is an error, as has been already proved, and also by the further fact that the amount of lessened vital capacity (say 100 cubic inches in the very earliest moments of recognised tubercle) is infinitely too great to be accounted for by the displacement of it by the tubercle, but is readily understood when the conditions attending the earlier stage are admitted.

With regard to the duration of the first stage, we admit universally, under the name of a predisposition, that it is commonly long, and as we cannot deny the influence of defective organization over its production in many instances, we must admit that in these cases the predisposition may have existed at birth. As, however, the causes of phthisis are not one only, but many, and those varying in influence as life advances; and as we find many cases of persons who in childhood were robust and healthy, but who subsequently fell into phthisis, we are equally entitled to affirm that its duration may be small. This conclusion can the less be resisted when we call to mind the occasional instances in which the diseases could be clearly traced to local causes. Whilst therefore the duration of the first stage is commonly long, it may be short.

Respiratory Sounds. I believe it to be incontrovertible that in the earliest stage of phthisis the respiratory sounds, universally or locally, are more feeble than in health. This is coincident with lessened inspiratory action, and both exist for an uncertain period before flattening of the chest occurs. The respiratory sounds in health are limited, so far as we know, to the bronchi and to the air vesicles; for whether any portion of them is due to movement of blood in the vessels has not been determined. The bronchial sounds in health are alone heard over the large bronchi, but in disease they are also very audible in the smallest bronchi, whilst the vesicular sounds are heard wherever there are air vesicles in action; and in health they prevent the perception of the sounds in the smallest bronchi. The vesicular sounds, moreover, vary in intensity with the action of the vesicles, and are feeble when the vesicular action is feeble; and when they are feeble to a certain degree, they permit the bronchial sounds to be heard. Hence, lessened vesicular murmur indicates lessened vesicular action, which is evidence of lessened movement of the lungs, and of lessened chemical and physical changes in respiration. The first indication may exist for some time, and must have proceeded to a certain extent before the next evidence of disease, viz., harsh respiration or bronchial breathing, is superadded; and with both, the only attendants may be lessened chest movements and consequent shorter inspiratory *trajet*. After a period, to these three will be added flattening of the chest; and all may and do exist in every case of chronic phthisis before tubercle is deposited, and constitutes what I have denominated the first stage of the disease.

The order of these signs will be—

I. Lessened chest movements: shorter *trajet* of air; short and feeble inspiratory sounds.

II. Flattening.

III. Bronchial breathing.

The only sign of this earliest stage which is open to dispute, is dulness on percussion, and that arises from our inability to detect the slightest change from health, since the sign is always relative, and many degrees of it are all expressed by the one common term, with the addition of the qualification, "little" and "great." Hence there must be a period in every case when medical men will differ as to its existence even, and much more as to its importance. It is, however, evident, that as the clear sound on percussion in health is due to a certain relative proportion between the aeriform and the solid contents of the chest, it will vary as this proportion varies, and will increase in emphysema, or even in a well-filled chest, and decrease when the action of the air vesicles is lessened. Hence, with the occurrence of the latter, there must coexist the former, but both must have progressed to a certain extent before they can be detected, and still more before their existence would be admitted by those who regard that sound only as dulness which results from the percussion of a solid body. Hence, in the first stage, dulness must be theoretically present, but practically may not be perceptible at the period of the disease then under examination.

With the occurrence of tubercle, there will be superadded signs of obstructed breathing, viz., wavy or jerking inspiration and prolonged expiration, increasing locally as the accumulation increases, and with these all the above mentioned signs increase in intensity in the place where the tubercle is found. The obstruction required in order to the production of these signs must be partial and lateral as opposed to complete and terminal; that is, it must occur in the course of the air-way, and leave a portion of the conduit open, so that the air may be forced beyond it. When all the air-cells of an intercellular passage are filled with tubercle, they cannot *directly* induce these sounds, but they do so *indirectly* by pressing upon adjoining air cells and minute bronchi. Absence of vesicular murmur, with its consequences, is the only direct sign of such a condition. After an uncertain period, there will be the further addition of moist sounds, indicative of air passing through a fluid, which in this instance is softening tubercle. There is no reason, theoretically, why this should not at the first occur, whilst the tissue of the lung is unbroken, for the softening of the tubercle is not a corroding process, like that of ulceration, but simply the imbibition by endosmosis of fluid by the tubercular mass by or with which the mass softens, and the process of tubercular transformation or degeneration is hastened. As the mass is extra-vascular, it is manifest that it must obtain the fluid with which it softens from the walls of its cell, and not from the centre of the mass, as has been affirmed; and this will be the case how many soever may be the cells implicated in the softening mass. This process may be non-inflammatory, but exudation of pus corpuscles always occurs at some period, and that is presumed to be the result of inflammatory action. The reason for the destruction of tissue is not simply the softening of the tubercle, nor any inflammatory or ulcerative action; but the basement membrane and capillaries having ceased to act for a time, lose their vitality and are ready to decay, and only wait for the partial emptying of their contents in order to break down. Moist fine crepitant râles, when localised in a tubercular mass, are practically held to indicate the destruction of tissue, and although it may not be so at the earliest moment, it soon becomes so in every case. The softening of tubercle, and the destruction of the cell walls having begun, it only remains that those processes shall go on until all the tubercle has been eliminated and a cavity results; and thus the whole are but steps of one process, and, in truth, are one stage of the disease. With softening, the bronchi are reopened, and air is admitted, which produces the moist sounds, and ultimately all the signs which are indicative of a cavity; but with the restoration of respiration there is no increase of respiratory changes, since the air cells in that part are destroyed or perhaps removed. With the formation of a cavity, the lung falls in, as do also the parietes of the chest immediately covering it, and the dull sound on percussion will in part have disappeared.

Thus, the essential signs of the three stages may be thus epitomised: first, lessened action; second, obstructed action; third, destroyed lung.

There is no reaction or compensating effort set up by nature in this disease whereby one part of the lung is made to do a double share of duty when another part is incapable of performing its function. Such a power is much less frequently exercised in chronic than in acute diseases universally; but in none is it so remarkable

and constant as in phthisis; so that the system quietly accommodates itself to the induced condition. Increase in the rate of function does not come under this denomination, since that increase is not partial, but general, and to both sound and diseased parts alike.

Conditions of the Throat. There are various conditions of the throat met with in phthisis, each of which calls for separate investigation and treatment; and taken generally they may be arranged under three heads.

I. A state of pallor without injection of the vessels and without desquamation or inflammatory action. This is a condition very frequent in the early stages of the disease, and is made known to the patient by a sense of dryness which induces cough. In this condition the sensation is generally referred to the fauces, pharynx, and upper part of the larynx alone; and it is the most annoying in the early morning and on changes of temperature. The surface does not always appear to be dry, but is smooth and shining, and the parts are attenuated. The anterior arch is atrophied, whilst the posterior stands out in sharp relief, and the intervening space is large and excavated from the absorption of fat from the areolar tissue, and oftentimes from a diminution in the size of the tonsillar glands. The latter organs seem to be of looser texture, and to have their superficial follicles projecting. This condition is one of lessened tonicity with increased sensibility, and with a diminution in the secreting function of the epithelium and mucous follicles. It may or may not be associated with derangement in the excreting organs, and is always amenable, temporarily, to local treatment as well as to the influence of general sedatives. I find in this stage that the application of a mixture of equal parts of chloroform and olive oil, by means of a large brush, is most useful, provided it be repeated every second day, and be thoroughly applied as far up the pharynx as behind the velum, and as far down the pharynx as possible; for, as a cause of cough, its site is limited probably to that of the pharynx. A strong solution of snet in milk (℥j to ℥vj), and applied often by table-spoonfuls, quietly and slowly swallowed, is most useful. In some instances the greatest relief is afforded by a strong solution of nitrate of silver. Morphia in minute doses is very useful in this stage; but it is in this stage especially that I have met with coughs which have resisted the influence of the general sedative and succumb to the local treatment. There cannot be a doubt, also, of the necessity for a general tonic and chalybeate plan of treatment in this condition of the parts; and I would earnestly call attention to this condition because it has not generally been considered as a disease.

II. A condition in which, while there is pallor of various parts of the fauces, there is injection of defined vessels in some parts, with more or less suffusion in others, and at each the parts appear to be loose and relaxed. The distended vessels are most evident upon the uvula, and the diffused redness on and between the arches, and upon the tonsils. Besides these, however, there is one condition which is very marked in many instances, viz., enlarged mucous follicles, chiefly on the pharynx, but also upon the uvula, and sometimes on the arches, appearing as small more or less coloured vegetations; and it is not unusual to find ulceration or enucleation of some of the follicles of the tonsil, and chiefly at its upper part. The uvula is commonly enlarged and elongated. In this condition there is commonly less sensation of dryness and irritability in the fauces than is found in that before described; but there is a troublesome sense of constriction or irritability at the lowest part of the trachea in the neck, and it is more commonly there that the patient at once directs attention. He is, however, annoyed by a sensation of phlegm adhering to the parts about the fauces, and is induced to continue a cough of some force with a view of detaching it. This state is commonly associated with disordered action in the alimentary canal or the liver, and is to be treated through those parts; but it is very greatly benefited by the application every third day of a strong solution of nitrate of silver, care being taken to brush every part well where the muscles are enlarged, or where there are vegetations, and to use an abundance of the solution so that much shall be left by the brush upon the mucous membrane.

III. The third form is one of desquamation, of fibrinous deposition, or of ulceration, and is generally met with only in the advanced cases. The desquamation is in patches, with or without a fibrous exudation, and chiefly in the pharynx, and in

the arches of the fauces. The fibrinous exudation is of a cacoplastic kind, and lies as a layer upon the denuded mucous surface, and may be partially removed by the brush when used to the parts. In this condition there is more general redness of the parts of a dull hue, and is often accompanied by hoarseness which is progressively increased in intensity. On inquiry, the patient at once complains of the throat, and frequently states that it is more disagreeable to him after—not during a meal. The tonsils are often enlarged, and participate in the general redness, and the fauces are more or less laterally contracted. There is also frequently a complaint of soreness and tenderness on pressure about the larynx, both on the sides and below the Pomum Adami. In this condition I have often found the free application of strong solution of nitrate of silver, and especially to the lower part of the pharynx, within our reach, to be followed by alarming choking; and upon the whole there is exalted sensibility, not so much of a simple nervous kind, as was mentioned under the first head, as that resulting from inflammatory action and destruction of tissue. This will of course vary with the chronicity and intensity of the conditions existing. As a local application, I have found great benefit from equal parts of oil and liq. potassæ, well laid on with a large brush; a mixture of cod-liver oil with an alkali, taken internally, but swallowed very slowly; or an alkali, as soda, with the tonic then in use, also drunk slowly; and in each case I believe there to be a local topical influence excited. The secretions of the mouth and throat are very acid, and hence call for the topical use of an alkali; and with the sensibility from inflammatory action, oil of a certain viscidity is very valuable. The external application of blisters is often called for, as also the administration of gentle purgatives. It is particularly necessary to avoid speaking, and the swallowing of mere secretions; and of all articles of food, suet and milk are the most useful. The latter is also a valuable medicinal agent if it be used in small quantities, and whenever the throat is unusually dry and irritable. I do not think that in this class of cases the application of a strong solution of nitrate of silver is so useful as in the former category.

In each of the classes of cases now described, whenever it is intended to make a topical application to the mucous membrane, the mouth should be well opened, the tongue held down and drawn a little forward by a broad spatula, the patient directed to breathe at his ordinary rate, and to breathe through the mouth, or the whole of the surface of the pharynx which it is essential to medicate will not be exposed. A camel's hair-brush, quite as large as the end of the little finger, should be used; and, after having been well dipped into the solution, must be carried dripping into the fauces, and be well rubbed upon the pharynx as high up behind the velum, and as low down towards the epiglottis as practicable, as well as in other places, and the good to be effected will depend upon the use of a sufficient quantity of the remedy, and upon its extensive and uniform application.

I think that too much importance cannot be attached to this branch of the subject, for not only will the patient's comfort be increased (whether he have complained of his throat or not), but the necessity for the use of sedative medicine may be greatly lessened. I am also of opinion, that notwithstanding the attention which has been given to this subject by our American and continental brethren, as well as by ourselves, we are in want of additional local remedies; and especially of such as the patient may apply.—*Midland Quarterly Journal, vol.* 1, *p.* 84.

27.—ON THE ARREST OF PULMONARY TUBERCULOSIS.

By Dr. Flint.

In this paper Dr. Flint furnishes the details of 24 examples of arrest of phthisis that have occurred in his own practice, and then makes some interesting observations upon the circumstances which seem to favour such arrest. The number might have been much increased had he not excluded such cases as were too recent, or the subsequent histories of which had not been sufficiently followed up, and those in which the disease was not arrested, but simply slow in its progress. The evidence of arrest from the fact of well-marked symptoms progressively abating in intensity, the patient increasing in weight and strength. "Until within

late years, instances of supposed recovery from phthisis were unreliable in consequence of the want of certainty in the means of determining the presence of the disease. This uncertainty has been removed by the discovery and improvement of the physical exploration of the chest. Physical signs in conjunction with symptoms render the diagnosis of pulmonary tuberculosis positive in the great majority of cases. I shall include in this collection only cases in which the diagnosis rests on the conjoined evidence of signs and symptoms. With some exceptions, the results of exploration of the chest, together with the previous history and existing condition of the patient, were noted prior to the arrest of the disease. In a few instances, however, the cases came under observation subsequently to the arrest, and the diagnosis was made retrospectively; that is, the physical signs and previous history were deemed sufficient to render it positive that the patient had been affected with tuberculosis." In the narration of the author's cases a marked distinction is made between "arrest" and "recovery." Arrest, it is obvious, may take place without recovery, when the tuberculous affection ceases to be progressive; but the processes of restoration never being complete, recovery can only be said to have occurred when, in connection with restoration of the general health, the local symptoms have entirely disappeared. Of the 24 cases, in 13 arrest of the disease was followed by complete recovery, while in 11 arrest was only demonstrated.

"In several of the cases the arrest of the disease was evidently due to an *intrinsic tendency* to that result; in other words, the disease ceased to be progressive, in consequence of its self-limitation. This is fairly to be inferred in those instances in which no appreciable external influences, in the form either of medication, diet, or regimen, were brought to bear in the course of the disease. Eight of the cases may be embraced in this category." The fact of such intrinsic tendency Dr. Flint believes is not sufficiently appreciated, having been, indeed, only of late recognised; and adds, that while it is probable that the arrest of tuberculosis, supposed to be brought about by the measures resorted to, is really in more or less of the cases actually due to the self-limitation of the disease; so it is to be supposed that this intrinsic tendency has been sometimes thwarted by injurious therapeutical or other means—especially when it was the custom to resort to the antiphlogistic course of treatment. In the cases here detailed no resort was had to antiphlogistic debilitating measures, such as depletion, mercurials, emetics, low diet, confinement, &c.; and it may be fairly asked whether an abstinence from such measures did not contribute to the favourable result.

The occurrence of hæmoptysis occurred in no less than 18 of the 24 cases. In 10 of the 18 it occurred more than once, and in some several times. The proportion exceeds that in which hemorrhage may be expected to occur in phthisis, according to the researches of Louis (57 of 87 cases), proving that the symptom is not an unfavourable one as regards arrest; the fact according with the conclusion arrived at by Walshe, that the occurrence of hemorrhage does not hasten the progress of the disease, but appears to produce an opposite effect. It also agrees with the inference from observations in individual cases in which hemorrhage seems to take place in lieu of a fresh tuberculous exudation.

Comparing the 14 cases, in which measures of treatment were adopted, it is found that in nearly all a change was made in the habits of life, such change consisting in relinquishing, partially or entirely, sedentary pursuits, and giving proportionately more time to *exercise in the open air*. In five of the cases this change in habits constituted the sole treatment, while all the eight patients in whom the disease was arrested without any measures of management, were persons of active habits of life. We are, therefore, warranted in regarding outdoor occupation as conducive to this result. "The exercise in the open air was not generally of the kind which often goes by that title, consisting in simple airings by gentle walks or drives; but it consisted in rough occupation, often involving considerable, and sometimes great exposure to vicissitudes of weather." *Change of climate* occurred only in two cases prior to evidence of arrest. "On this subject I have been led to conclusions to which others have also arrived, viz., that climate, in itself, exerts no special agency in determining an arrest, but that it may favour this result indirectly by affording better opportunity for exercise in the open air, and furnishing objects of interest to the mind which will secure that object. . . . It has seemed

to me far less important to fix upon a situation supposed to be the most favourable in its climatic aspects to the tuberculous patient, than to select a residence where the inducements to active habits are greatest. To place a patient in a group of invalids, in a particular spot where he is expected to derive some specific remedial influence from the atmosphere, is rarely useful. The *ennui* incident to such a position, for a man of active habits of mind and body, is intolerable, and the moral effect of his associations is injurious. Patients will do wisely in avoiding the favourite places of resort for those affected with the disease, and in choosing points where the incitements to and the resources for physical exertion abound. Generally the objects of a change of climate are better secured by frequent change of place than by remaining stationary. Travelling in foreign countries, even when, so far as the climate is concerned, the change is for the worse rather than the better, may be in a high degree useful, because the exercise which it invites is not endured as a task, but accepted as a means of mental gratification."

With respect to *diet*, the object was not to lower the powers of the system, but on the contrary to support and develope them by nutritious food. The patients were encouraged to live generously, indulging and cultivating an appetite for any and all the varied wholesome articles of food, with a full proportion of meat. In consequence of carbonaceous alimentary principles appearing to be useful in the management of phthisis, and the alleged fact of the comparative freedom from the disease enjoyed by persons working in sugar houses, Dr. Flint advises the free use of sugar. "It is a significant fact, apparent on referring to the cases I have reported, that appetite and digestion were, in general, not greatly impaired. It accords with the views just expressed to regard an unimpaired appetite and digestion as highly favourable for an arrest of the disease. Observation undoubtedly shows us instances in which the tuberculosis is progressive, notwithstanding the ingestion and apparent assimilation of nutritious food; but it probably can show few examples of arrest of the disease, when, either from disinclination or injudicious management, the diet is insufficient for the full support of the body, or fails to be appropriated to that end. No part of the management of tuberculosis seems to me of greater importance than that relating to the diet; in fact, whatever efficiency belongs to active habits of exercise, it is reasonable to suppose, is in great measure exerted by means of the increased activity of the processes of assimilation thereby induced." Diffusible stimuli, as wine, beer, and spirits, entered more or less into the management of a considerable number of these cases. They were given in moderate quantities, subsidiary to alimentation, *i.e.*, contributing to render the digestive processes more active and complete. "I have of late advised their use much more freely than formerly, and I think I cannot be mistaken in attributing to them much value. I have observed that patients affected with tuberculosis are often able to take spirits in large quantity without experiencing stimulant or intoxicating effects. The disease appears to be one of those in which these effects are with difficulty produced."

Beyond mere palliatives, little use was made of *medicinal agents* properly so called. No remedies were given with reference to their special influence on the tuberculous cachexy, unless cod-liver oil can be so regarded. Tonics were often ordered, with the intention of influencing the processes of digestion and assimilation; and in this point of view they must be regarded as important agents. Cod-liver oil does not hold a very conspicuous place in these cases. Several of them occurred before it came into vogue: and in other cases it was taken for too short a period, either from the repugnance or the disturbance of the digestive organs it gave rise to. In very few instances was it persisted in. "Had a large number of these cases occurred within a more recent period, or were I to report the cases during the last few years in which the progress of the tuberculosis appeared to be greatly retarded, although not arrested, this remedy would be found to enter more generally and often largely into the treatment. That it is a valuable remedy I can scarcely entertain a doubt; but it is to be considered that, since it has become emphatically *the* remedy employed in this disease, improved pathological views and the lessons of experience have wrought a radical change in the management of the disease as regards other measures—a change consisting in the abandonment, to a great extent, of antiphlogistic and debilitating measures, and a recognition, more and more, of the importance of measures of an opposite character."

"A point pertaining to the *mental constitution* of persons affected with tuberculosis seems to me worthy of notice. As regards the successful management of the disease, much depends on the patient's energy and perseverance. Tuberculous patients, as is well known, usually entertain sanguine expectations of recovery; but in a large proportion of cases they expect recovery to take place without any extraordinary agency on their part to secure that result. The disease, while it engenders hopes which are so often fallacious, seems frequently to impair that determination of purpose without which the means requisite to effect an arrest will not be efficiently pursued. A passive expectancy of recovery, and a calm acquiescence in the prospect of a fatal termination, belong to the natural history of the disease. On referring to the cases which I have reported, I find that, in general, the persons manifested greater resolution than is usually associated with the tuberculous cachexy. This was due in some instances to innate strength of character, and in other instances to the force of circumstances."

"In conclusion, the general views which, with our present knowledge, are to govern the management of pulmonary tuberculosis, may be summed up in a few words. The ends to be attained are, the removal of the cachexy on which the progress of the disease depends, the consequent arrest of the disease, and the promotion of the processes of restoration. There is no special medication to be pursued for the attainment of these ends; they are to be attained by measures which, in general terms, develope and strengthen the power of the system. This mode of expression, it is true, in a scientific point of view, must be considered rather vague, but in a practical sense it has a meaning sufficiently definite. The measures are hygienic rather than medicinal; but much importance often belongs to the latter. The hygienic measures which are most important are laborious exercise in the open air conjoined with agreeable mental occupation, and as conducive thereto, frequently, change of business, the selection of a more eligible climate, and travelling are desirable, if not necessary; generous diet, and in many, if not most instances, the free use of alcoholic stimulants. The medicinal remedies, in addition to those which are simply palliative, are chiefly those of the tonic class, and in this category may be included the analeptic which has of late years had so much celebrity."—*American Journal of Med. Science.—Med. Times and Gazette, Feb.* 13, 1858, *p.* 174.

28.—ON THE "SPECIFIC" ACTION OF CERTAIN SALTS OF PHOSPHORUS IN PHTHISIS.

By Dr. Richard Payne Cotton, Physician to the Hospital for Consumption, &c., Brompton.

[A fair trial has been given to Dr. Churchill's new plan of treatment of phthisis; the results are as follow.]

It may be as well to state briefly that Dr. Churchill is of opinion that the direct cause of tuberculosis is the decrease in the system of the normal proportion of phosphorus in an oxygenizable state, and that the natural remedy should be sought in some compound of phosphorus at the lowest possible degree of oxydation. The hypophosphites appeared to him to offer the nearest approach to such a quality; and of these he selected the hypophosphites of soda and of lime, as being the most soluble and "assimilable." "They produce," he observes, "a manifest increase of nervous power, sometimes even from the first day of their administration, together with an unusual feeling of comfort and strength. At the same time the nervous symptoms, if there have been any, disappear, as well as the functional derangements, such as weight, &c., of the intestinal mucous surface. The appetite increases, often in an extraordinary manner. The evacuations become regular, and more abundant; the perspirations, if they have existed, cease; sleep becomes calm and profound." He administered it to thirty-five consumptive patients, all of whom were either in the second or third stage of phthisis. Of these, "nine were completely cured, eleven experienced great melioration, fourteen died," and one was still under treatment.

My experience of this remedy is based upon carefully made observations upon *twenty of my own in-patients* at the Hospital for Consumption. Copious notes

were taken by Dr. Walker and Mr. Ford, the resident clinical assistants; and are open to the inspection of those who may be desirous of obtaining more information than I am able to offer in the present communication. Dr. Churchill's rules for administering it were carefully attended to; five grains dissolved in water, with the addition of a small quantity of syrup, being given three times a-day. The cases consisted of nine males and eleven females, all of whom were adults. Three were in the first stage of consumption, five in the second, and twelve in the third. All were affected with the disease in its simple form, there being no other than the ordinary complications. The remedy was administered for a fortnight, notes being regularly taken; if at the expiration of this period no improvement was observable, it was discontinued; but if the patients expressed themselves relieved, other medicines were prescribed with the view of testing whether such relief was fairly attributable to "specific" agency, or to other circumstances—such as improved diet, rest, &c., which should always be taken into account in estimating the effect of medicinal agents upon hospital patients.

Of the three patients in the first stage of the disease, two were not perceptibly influenced by the hypophosphites, but afterwards improved considerably under tonic treatment and cod-liver oil; the other considered himself much stronger, but before admission to the hospital he had been almost starved, so that good diet, &c., may reasonably claim a fair share of the credit; and he left before other medicines could be tried.

Of the five patients in the second stage of the disease, two were not in any way influenced by the hypophosphites, but subsequently expressed themselves as feeling "much better" under tonic treatment with cod-liver oil; two slightly improved, but one of these afterwards advanced at a much more rapid rate under steel and oil, and the other seemed to get on quite as well under steel and quinine; the remaining one became much worse from a gradual advance of the malady.

Of the twelve patients in the last stage of the disease, one felt herself better under the hypophosphite than under any other remedy; one improved greatly, but not more than under the subsequent use of other tonics: three improved slightly, but afterwards progressed much more rapidly under steel and cod-liver oil; two were not at all benefited, but found themselves "much better" under a change of treatment; in two cases no effect was observed, and in spite of all treatment, the disease ran on; one of the patients became worse, but subsequently gained strength under the oil and quinine; the remaining two died.

Thus, in only two instances could this remedy be said to act with any marked benefit, and in one of these its good effect was very equivocal, the patient previous to admission having been in an almost starving condition, and leaving the hospital before the comparative trial could be made with other medicines. In all the rest it acted certainly in no way as a "specific;" in most, it seemed to be inert; and the few cases which slightly improved during its administration were evidently instances of the *post*, and not the *propter hoc*, since some advanced equally, and many of them more rapidly under the subsequent use of steel or quinine with cod-liver oil.

It is very possible that the compound of phosphorus proposed by Dr. Churchill may in some cases have a tonic and beneficial influence; but to any "specific" action upon tuberculosis it seems to have no claim.

In a foot-note to the tabular statement made by the abovenamed Clinical Assistants, I find the following remarks by Mr. Ford:—"As far as we can judge from these cases, it is obvious that the hypophosphites are of no therapeutic value whatever in the treatment of phthisis; indeed they seem to be simply inert, doing neither good nor harm, except indirectly in the latter sense by interfering with more positively beneficial modes of treatment." This opinion is fully endorsed by Dr. Walker.

The employment of phosphorus in the treatment of phthisis is by no means novel. For the last eight or nine years I have been in the habit of using a mixture consisting of the dilute phosphoric acid with the phosphate of iron; and at my suggestion it has been inserted in our Hospital Pharmacopœia. In many cases much good has attended, and I think I may say been produced by, its administration; but I attribute to it no *specific* action. I believe it is a simple tonic, adapted to certain depressed states of system.

Phosphorus is a well-known and apparently necessary constituent of all healthy nerve structure; and in some conditions of low nervous vigour, its medicinal employment may be of great service. We find that it enters largely into the composition of the most nutritive kinds of grain; and we may be quite sure that it is not placed there without a purpose.

If phosphorus, then, be no specific for phthisis, but a simple tonic acting usefully in certain lowered states of nervous energy, are we to seek further for specific remedies for this most intractable of all diseases? I believe the search will ever be futile. Until we know what *life* really is;—until some new aid can be brought to bear upon its demonstration; until we find out in what consists that diminished power of vitalising new products, as exhibited in the formation of tubercle and other imperfectly organised substances from the blood, we must be content with treating consumption, as at present, with tonics and cod-liver oil.—*Medical Times and Gazette, Feb.* 13, 1858, *p.*163.

29.—ON INJECTIONS OF THE BRONCHI IN PULMONARY DISEASES.

By Dr. John Hughes Bennett, Professor of Medicine in the University of Edinburgh.

In a publication which I received from Dr. Horace Green of New York, in 1856, there is a statistical table of 106 cases of pulmonary disease, which were treated by injections of the bronchi with a solution of nitrate of silver. A flexible catheter was introduced through the larynx, into the right or left division of the trachea, and, by means of a glass syringe, the injection thrown into the lung. This bold proceeding was described as producing great benefit in cases of pulmonary tuberculosis, bronchitis, and asthma. Whilst tuberculosis is at first a constitutional disease, its localization in any part reacts more or less on the general health—and the opinion I have long entertained, that any means which could enable the physician to act directly on the tissue of the lung itself or inflamed bronchi, would assist his efforts at cure, at once led me to take a favourable view of this new mode of treatment. Besides, why should not nitrate of silver act as beneficially on the mucous membrane of the trachea and bronchi, as on that of any other hollow viscus? The difficulty was obviously to get it there through the rima glottidis. I therefore wrote to Dr. Green, requesting him to send me the instruments he employed. In a letter which I received from him in reply, dated New York, Jan. 30, 1856, he says:—

"I would, with much pleasure, send you the instruments I employ, but they are simple, and may be obtained at any surgical instrument maker's shop. They consist of an ordinary flexible or gum catheter, and a small silver or a glass syringe. The catheter is Hutching's gum-elastic catheter (Nos. 11 or 12), which is 12½ inches in length; and, as the distance from the incisor teeth to the tracheal bifurcation is, ordinarily, in the adult about eight inches, if this instrument is introduced so as to leave only two inches of the catheter projecting from the mouth, its lower extremity must of course (if it enters the trachea) reach into one or the other of its divisions. I first prepare my patients by making applications with the sponge-probang, for a period of one or two weeks, to the opening of the glottis and the larynx, until the sensibility of the parts is greatly diminished. Then, having the tube slightly bent, I dip the instrument in cold water (which seems to stiffen it for the moment, and obviates the necessity of using a wire), and with the patient's head thrown well back, and the tongue depressed, I place the bent extremity of the instrument on the laryngeal face of the epiglottis, and gliding it quickly through the rima glottidis, carry it down to or below the bifurcation, as the case may require. It is necessary that the patient should continue to respire, and the instrument is most readily passed during the act of inspiration. The tube being introduced, the point of the syringe is inserted into its opening, and the solution injected. This latter part of the operation must be done as quickly as possible, or a spasm of the glottis is likely to occur. Indeed, if the natural sensibility of the aperture of the glottis is not well subdued by previous applications of the nitrate of silver *solution, or if* the tube, in its introduction, touches roughly the border or lips of *the glottis, a spasm of the* glottis is certain to follow, which will arrest the further

progress of the operation. The *epiglottis, which is nearly insensible* (and this you may prove on any person, by thrusting two fingers over the base of the tongue and touching, or even scratching with the nail, this cartilage) should be our guide in performing this operation. The strength of the solution for injecting is from 10 to 25 grs. to the oz. of water. Commencing with 10 or 15 grs. to the oz., its strength is subsequently increased, and the amount I now employ is from ½ to 1½ drachms of this solution.

"In cases of bronchitis, asthma, and in phthisis, even the employment of the tube once or twice a week, diminishes the cough and expectorations, with great certainty, especially in the two former diseases; and many cases have recovered under the local treatment after other means had failed. The applications of the sponge-probang are continued in the intervals of the employment of the tube."

My period of attendance on the clinical wards having expired in January, it was not until last May that I had an opportunity of making a series of observations on this subject. I was then fortunately assisted by Professor Barker of New York, who showed me the kind of catheter he had seen Dr. Green employ, and demonstrated the manner in which the operation was performed. Without entering into minute particulars, I have only to say that I have confirmed the statements made by Dr. Horace Green. I have introduced the catheter publicly in the clinical wards of the Royal Infirmary, in seven patients. Of these five were affected with phthisis in various stages—one had chronic laryngitis with bronchitis, and one chronic bronchitis, with severe paroxysms of asthma. In several other cases in which I attempted to pass the tube, it was found to be impossible—in some because the epiglottis could not be fairly exposed, and in others on account of the irritability of the fauces and too ready irritation of cough from pressure of the spatula.

My experience of this treatment is as yet too limited to permit my saying anything of its permanent effects. In the case of bronchitis with asthma—a female aged 24—I have now injected the lungs eleven times, at first throwing in ʒ ij. of a solution of nitrate of silver, of the strength of ʒ ss. of the distilled salt to ℥ j. of crystallized water, and latterly, I have thrown in ℥ ss. of a solution of the strength of ℈ ij. to ℥ j. She declares that no remedy has had such powerful effect in lessening the cough, diminishing the expectoration, or delaying the asthmatic paroxysms. She breathes and blows through the tube, when inserted four inches below the larynx, and I have been surprised at the circumstance of the injections not being followed by the slightest irritation whatever, but rather by a pleasant feeling of warmth in the chest (some have experienced a sensation of coolness), followed by ease to the cough, and a check for a time to all expectoration.

I think it of importance that these facts should be known to the profession, as a homage justly due to the talents of a distinguished transatlantic physician, and with the view of recommending a practice, which, if judiciously employed, may form a new era in the treatment of pulmonary diseases.—*Edinb. Med. Journal, Nov.* 1857, *p.* 389.

30.—EFFECTS OF LOCAL INFLUENCES ON SPASMODIC ASTHMA.

By Dr. Hyde Salter.

[This paper was read before the Medical Society of London.]

Its purport was to show that, in a very large proportion of cases of asthma in which it has been fairly tried, change of locality effects an instantaneous cure, which is permanent as long as the asthmatic continues his residence in the place that has cured him. The author remarked that, although the subject of his paper was a single method of cure of a single disease, yet that the efficacy and completeness of the cure, and the painfulness and intractability of the complaint, vindicated it from unimportance: and, indeed, that in so distressing and unmanageable a disease, any remedy that offered even a small per centage of cures might be considered the greatest possible boon. The paper was illustrated by nearly thirty original cases, and the points that the author considered to be established were as follows:—

a. That residence in one locality will radically and permanently cure asthma resisting all treatment in another locality.

b. That the localities which are the most beneficial to the largest number of cases are large populous and smoky cities.

c. That this effect of locality depends probably on the air.

d. That the air that would be imagined to be the worst for the general health is, as a rule, the best for asthma; thus the worst parts of cities are the best, and conversely.

e. That this is not always the case, the very reverse being sometimes so—a city air not being tolerated, and an open pure air effecting a cure.

f. That there is no end of the apparent caprice of asthma in this respect, the most varying and opposite airs unaccountably curing.

g. That, consequently, it is impossible to predict what will be the effect of any given air, but that probably the most opposite to that in which the asthma seems worst will cure.

h. That some of these differences, determining the presence or cure of asthma, appear to be of the slightest possible kind, arbitrary, and inscrutable.

i. That the mere conditions of locality appear to be adequate to the production of asthma in a person whose disposition to it was never before suspected, and who probably never would have had it, had he not gone to such a locality.

k. That, consequently, probably many healthy persons who never have had asthma, and never may, would have been asthmatics if their lot had been cast in other localities.

l. That possibly there is no case of asthma that might not be cured if the right air could only be found.

m. That the disposition is not eradicated, but merely suspended, and immediately shows itself on a recurrence to the original injurious air.

n. That change of air, as change, is prejudicial.

o. That, from the caprice of asthma, the constancy of the result in any given case is often deranged.—*Lancet, Dec.* 26, 1857, *p.* 648.

31.—THE "MARSHALL HALL METHOD" IN THE TREATMENT OF ASPHYXIA.

By JOHN WIBLIN, Esq., Southampton.

On Saturday, the 10th of October, a young man named Kanes, aged eighteen, in the employ of a fishmonger of Southampton, in the act of going on board the *Australasian* steamer, missed his footing and fell overboard. An alarm was immediately given, when Rombardier Connor, about to sail with his company for India, hearing that a man had fallen overboard, stripped himself of his clothes, and jumped into the water to the rescue of the drowning man. He dived after him three times in the water about the ship, and was at last obliged to abandon his praiseworthy efforts. R. Russell, dock-head-man, was immediately dispatched to procure the grappling-irons; and on his arrival alongside the vessel, made two other unsuccessful attempts to seize the body. Joseph Fryer, foreman to the dock company, subsequently made two hauls from stem to stern of the steamer, and his exertions also proved of no avail. Failing in their efforts to discover the body, Russell was let down into the pilot's boat, a distance of twelve feet, by means of a rope, and then made one haul with the irons from the stem to the stern of the ship, and was again unsuccessful. He lastly made another haul from stem to stern, and succeeded in finding the body. Kanes was now lifted into the boat, a rope was lowered from the ship, to which his body was secured; he was then hauled up to the quay, and finally taken on board the steamer and deposited in the galley, where his clothes were removed and exchanged for hot blankets.

The company's superintendent states most positively, that the body was *completely submerged* for a period of *ten minutes;* and his statement is further confirmed by Russell, Fryer, and several of the bystanders. The above details appear somewhat prolix; but they are given with a view to establish, in the most *unequivocal manner*, the calculation of time occupied in discovering and finally

landing the body. Medical assistance was sent for in every direction, and the first person who arrived was Mr. M'Cowan, the surgeon of the ship, quickly followed by Mr. Thurston, surgeon to the *Orinoco*, and myself. The first step in our proceedings, on the suggestion of Mr. Thurston, was to remove the body from the galley (or kitchen) of the vessel to an open space in the ship, where there was a free current of air; the position of the patient was changed from supination, and he was placed on his face, his wrist being carried upwards, as directed by Dr. Marshall Hall, and placed under the forehead. Pressure was now made along the course of the spine and thorax, with a view to induce *ex*piration: the pressure was then removed, and its removal was followed by slight *in*spiration after the lapse of about *forty minutes*. The weight of the body was then removed from the thorax and abdomen by gently turning it on its side, and a little beyond. These movements were again and again performed, about sixteen times in the minute, and every other remedial measure adopted as suggested and laid down by the distinguished authority above quoted. After the lapse of one hour and a quarter, we imagined that there was a slight movement of the ribs. We still persevered, adding to our prone and postural treatment, the free inhalation of ammonia, when, after a further continuance of our unceasing efforts, we observed that the ribs moved naturally, that the carotids pulsated, the nostrils expanded, the heart performed its ordinary functions—in a word, that after *five hours'* persevering efforts, the patient was enabled, without artificial assistance, to perform the ordinary functions of respiration. During the whole period of our treatment, the pupils remained fixed and dilated, and we were constantly reminded of the imperative necessity of continuing without intermission the means to keep up artificial respiration, as the patient relapsed into a comatose condition, on ceasing for half a minute only, the systematic movements of expiration and inspiration.—*Lancet, Nov.* 7, 1857, *p.* 482.

DISEASES OF THE ORGANS OF DIGESTION.

32.—TREATMENT OF CYNANCHE MALIGNA.

By Dr. W. A. Bryden, Mayfield, Sussex.

[During an epidemic of the disease which has for some time been raging in the neighbourhood of Mayfield, the author has met with great success from the treatment here recommended.]

The symptoms presented by the majority of cases were those described by Fothergill, Bretonneau, and others: varying from slight diphtheritic tonsillitis to nearly complete obstruction of the throat, with whitish or gray-coloured specks and patches on the palate, tonsils, and uvula; accompanied by fever of a low typhoid type, and great prostration of the powers of life. In only one of the cases did I notice any rash, and in that it was of a papular character.

The treatment which I have found most successful has been to give powdered guaiacum in combination with chlorate of potassa; to support the strength with beef-tea, mutton-broth, &c.; and to cause the patient to frequently gargle the throat with a solution of chlorinated soda: or, if he be too young, or unable from any cause to use the gargle well, to cause his throat to be mopped or sponged with it. The secretions, of course, must be attended to; and in the later stages of the disease, tonics, such as quina, or bark, and nitric acid, will be beneficial.

I was led to use the guaiacum in this disease from having frequently seen the benefit derived from it in the ordinary cases of cynanche tonsillaris—a circumstance which, if I mistake not, was first pointed out by Mr. J. Bell, of Barhead, twelve or fifteen years ago. The more *sthenic* character of the cynanche tonsillaris, however, renders the addition of nitrate of potassa to the guaiacum preferable to the chlorate.—*British Medical Journal, Nov.* 21, 1857, *p.* 967.

33.—ON THE USE OF PEPSINE IN THE DIGESTION OF DISEASE.

By Dr. T. K. Chambers, Physician to St. Mary's Hospital, &c.

[So early as the time of Pliny, the fluids of the stomach of sucking animals were in common use for a variety of medicinal purposes, and in more modern times Spallanzani, Laennec, and recently Dr. Handfield Jones, of St. Mary's Hospital, have employed similar substances, though the disgust occasioned by their nature prevented their more extensive use.]

The matter showed itself in quite a new light, when an ingenious French pharmacien, M. Boudault, made the very elegant and agreeable preparation, now so well known to the profession as "*poudre nutrimentive*." It is simply pepsine from the sheep's stomach dried on starch, with lactic acid, added or not according to circumstances. When, one day in the autumn of last year, Dr. Waller Lewis showed me some of this powder he had brought from Paris, I saw in a moment that it was what we had been so long wanting, and instantly ordered a kilogramme over for experiment. You have since that time seen me prescribe it to numerous patients in the wards, and I have also employed it frequently in private practice, so that I think we are in a position now to form an idea of its value to the practical physician.

The cases in which I have administered it with advantage are six of phthisis pulmonalis, one of cancer near the pylorus, two of gastric ulcer, one of hysterical vomiting, two of nausea, one of hysterical pain after eating, two of atonic pain after eating, one of atonic gout, one of dilated stomach, one of gastric flatulence, three of low fever, and two of pneumonia. In these all the benefit which physiological reasoning would lead us to expect from the remedy has followed.

I have also injected it *per annum*, mixed with food, in a case of ulcerated œsophagus, and in a case of manio-hysterical vomiting and dysphagia. But in neither did it appear to delay death. Probably the ilia are the only part of the alimentary canal capable of absorbing chyme.

Several other cases of atonic pain after eating, in which I have given pepsine, I have not since heard of, but probably should have done so had any harm happened.

In one case of chronic dysentery it caused nausea and obliteration of appetite. In one case of consumption, and in one of pendulous tumour of the abdomen (attached probably to the pylorus), it purged the patient. These are the only instances of inconvenience that I have been able to assign to the remedy.

The phthisical cases have been those where a progressive anæmia was accompanied by an inability to digest meat or other albuminous food. This inability is exhibited in three ways; first, by the eating of such diet, even in very small quantities, being followed by a sense of great weight and oppression at the epigastrium, and sometimes by actual vomiting; secondly, by the passage of loose fetid stools containing much unaltered muscular fibre, lumps of fat, and such like remnants of a former meal; thirdly, by entire loss of appetite and an instinctive nausea excited by the bare idea of flesh food. Often all three phenomena exist together; but each one may be found separately, and is of itself a sufficient indication of the patient's state.

The pathological explanation of these symptoms is an excessive secretion in the upper part of the alimentary canal of alkaline mucus, which envelopes the food, and prevents the action of the gastric juice upon it. The consequence is, either its rapid ejection unaltered, or its decomposition, and the evolution of fetid gas. If vegetable food be mixed with the meat, it ferments into lactic and acetic acids, and thus you may have acid eructations from the stomach, and acid diarrhœa arising out of the want of acid gastric juice. If this excessive secretion of mucus is recent and moderate, the appetite may remain uninjured, nay, may sometimes be morbidly increased; but a long continuance, joined to progressive pulmonary disease, is sure to induce an anæmic condition of the alimentary canal, which results in a disgust for food.

Now this state of things it is very important to check. If it goes on, the patient cannot take in sufficient quantities the meat which should refresh his degenerating *muscles and pale blood*, he cannot take the cod-liver oil which is to replace his

emaciating tissues; he cannot, from weakness, take the exercise which might renew his whole diseased system. And I do not know any remedy which more readily, obviously, and directly does what it can towards checking it than pepsine. It does immediately and surely what it can; but then that is not very much. Do not raise your expectations of its powers too high, or you will be disappointed. Understand clearly what position this agent holds in the rational materia medica, and then you will know what good results you may demand with reasonable hopes of obtaining them. It is an *artificial*, and, therefore, a *partial* substitute for a *natural* process. Gastric juice prepared by a healthy animal is mixed with the food, instead of that which the patient's stomach ought to prepare. And it acts in the body just as it would out of the body under the same circumstances of heat and motion. The chewed meat is dissolved by it just as you see the white of egg suspended in this beaker dissolved by it; and the putrefactive process is arrested by it in the intestinal canal just as you perceive the putrefactive process is arrested by it in the experiment under our eye. For you may observe that this albumen suspended in pepsine is quite sweet, whereas that soaked for the same time in saliva is most fetid. It is, therefore, a substitute for the natural secretion, and to a certain extent supplies its place. But like all imitations of Nature it is coarse and imperfect. The solvent, instead of being gradually and continuously poured on to the outside of the mass of the food, is mixed up in the middle of part of it, and acts merely chemically, without any of the mechanical and physiological helps belonging to natural digestion, and consequently soon exhausts its energies. The chyme, or albumen prepared for absorption, instead of being wiped off, and swept away by the stomach, remains for some time mixed up with the pepsine, so that the latter is not freed for the solution of a small portion. By this imperfect process only a very small quantity of meat can be dissolved at once.

Hence, if you hope that by administering pepsine with it, you can get a full and sufficient meal eaten at once by your consumptive patient, you will fail. Give half a mutton chop with the remedy the first day; and if that is digested well, try a whole chop the next; but remember, then, you have got to the end of your tether, and that the digestion of a larger quantity will not be at all assisted by artificial solvents. Also, after a chop has been digested and absorbed twice, or even once, a-day by this means for about a week or ten days, the expedient has probably done all the work that can be asked of it, and the stomach has either recovered sufficient energy to digest alone, or will require different remedies to enable it to do so. Therefore, for the pepsine to be completely successful in these cases—first, it must be given only to those who cannot digest half a mutton chop without it; secondly, more than a chop must not be given at once; thirdly, it must not be required to go on alone improving the patient's condition for more than a week or ten days.

But for the time named, I do advise its being given alone, and the action not interfered with in general by other drugs. Many will really prevent its chemical effect, and all will confuse your judgment of the advantage gained. In this time you will generally find that the repugnance of the patient to meat has been overcome, and that a small quantity of it at a time can be relished and digested; the morbid fetor of the stools diminishes, and the flatulence and distress arising during their passage through the bowels cease. A renewed strength and a renewed power of assimilation commence, the sleep becomes more natural, with the diminution of night-sweats and hectic; while, at the same time, the pulmonary symptoms of cough, dyspnœa, &c., relax, and a step at any rate is taken in the right direction towards the cure of the disease. It is remarkable, too, what a slight improvement in the digestive powers will often enable iron and cod-liver oil to be taken. These drugs are, you know, the main stays in the treatment of tubercular consumption, and any expedient, however temporary, which will pave the way for their administration, is a great boon.

It would not suit the plan of the present lectures to quote in detail these consumptive cases. They differ much from one another in their unessential characters —namely, in the stage of the disease, their ages, sexes, and general phenomena; while they are closely similar in essential points—that is to say, in those which I have described as indicating a mucous condition of the stomach, preventing the gastric juice being poured out on the food, and finally leading to anæmia and

atrophy of the secreting membrane. They resemble one another also in exhibiting an immediate and uniform amelioration of limited extent. In one man, who had loss of voice apparently from crude tubercle in the lungs, with ulcerated trachea, the amelioration of voice and cough continued so long, that I let him remain three weeks taking pepsine alone without other drugs; but, then, he also continued to improve more afterwards on cod-liver oil, so that he might just as well have commenced it sooner. In another, who had tubercular ulcers in the bowels, afterwards fatal, there was an idea that the pepsine caused a relapse of diarrhœa; but I suspect the coincidence was accidental. These are the only instances where it appeared to do more good or less good than I have attributed to it.

The case I alluded to of cancer near the pylorus is a type of a disease necessarily fatal, being still worthy of the careful attention of the medical man. When the patient came under my care, she was unable to keep anything at all on her stomach, every solid, and even an ounce of beef-tea, was vomited unchanged within half an hour of its ingestion. She had been taking prussic acid, soda, creasote, opium, and a variety of remedies without benefit; and, as might be expected, was dying rapidly of starvation. I ordered her immediately half a mutton chop, with fifteen grains of Boudault's "poudre nutrimentive," twice a-day, and an ounce of milk and lime-water every two hours. She kept all that down; it passed the pylorus, and nourished her so far that she had a good night's sleep, and the next day was able to take a whole mutton chop. So she went on for three weeks, gaining flesh, losing her pain, and acquiring a cheerfulness about the future, unwarranted by the gloomy prognosis which truth compelled me to give her. So far all was right; reason had reasoned well. But I feel it a duty to tell you the mistakes I make, as much as the occasions on which I act wisely. And I find recorded in my note-book a warning, which I advise you to profit by, of the importance of "letting well alone." The patient had from the first jaundice, with pale stools and bilious urine; and now, I thought, had sufficiently recovered strength to bear an endeavour to make the liver clear the blood of its bile a little more briskly. I therefore gave her some nitro-hydrochloric acid, which is often of great use under similar circumstances. But the result was most unfortunate. The vomiting returned with violence. The drug was discontinued, and it stopped, but not before the ground gained had been lost. Then, again, contrary, I must say, to my wish, it was judged expedient to give the patient mercury, and she rapidly sank. The jaundice was then proved to be dependent on cancer of the gall-bladder. Now, here it is impossible not to allow that life was prolonged by artificial pepsine, and would have been further prolonged but for the Anglo-Saxon propensity in both physician and patient for continuous improvement.

In one case of hysterical vomiting, and two of nausea preventing due quantity of food being taken by hysterical persons, this remedy has appeared to enable the patient to swallow meat. The mere nutriment thus imbibed has improved the appetite for future meals; and the valerian and salt sponge-baths afterwards administered seemed to have a more rapid effect than without it. The rational explanation of its good influence is, that both in hysteria and anæmia the secretion of gastric juice is apt to be irregular and deficient, and that the morbid processes here act, as is so often the case, in a circle; the non-secretion of gastric juice still further starving the blood and aggravating the hysteria and anæmia, and that further aggravation again diminishing the secretion. But once breaking the magic chain, and enabling even a single meal to be well digested, begins a march toward health which it is comparatively easy to guide afterwards.

Closely connected with the last-named complaints is, in the female sex, atonic gastralgia. Indeed, I may say it is practically identical. At the same time that the gastric juice is imperfectly secreted, the muscles of the stomach refuse to perform the peristaltic motions with sufficient activity. Hence not only is the alimentary mass a greater inconvenience than it ought to be, but it actually lies longer than usual in the first portion of the canal, as may be found on percussion of the epigastrium. It is a common consequence, in the educated classes, of excessive mental and sedentary labour. Where this is very great, I have found pepsine of some use; but in the slighter cases, which more frequently come before us, I have not seen any apparent benefit accrue from it. A change of habits is here the only *permanent remedy*, and of drugs strychnine is the most efficacious. I see that M.

Boudault prepares a powder in which strychnine is combined with pepsine and lactic acid. I presume it is for this sort of cases that it is intended, but I do not like mixing up prescriptions in that way, and prefer the strychnine alone, as it is the real active ingredient.

In a case of diarrhœa and mucous vomiting, occurring in an old victim of atonic gout, the stools became more natural and less frequent, and strength was regained on taking pepsine and mutton chops, instead of opium and acetate of lead.

As cases of acute disease have an innate tendency to get well, they are not of course such good tests of the essential benefit derived from remedies. And it is only by comparison on a large scale that one could speak of fever and pneumonia being benefited by pepsine. There seemed, however, in those alluded to, an immediate improvement to take place in the appearance of the tongue and of the evacuations; and it is impossible not to think that the amelioration thus evidenced of the alimentary canal would conduce to lessen the mortality of the disease.

On the whole, then, I cannot but conclude that we have in artificial pepsine a valuable and safe remedy, and an important aid to rational medicine.

The way in which I have given it has depended on the diet on which the patient is. If regular meals are eaten, then it is best taken spread as a sandwich between two thin slices of bread at the commencement of the dinner. Fifteen grains of the starchy powder is the usual dose for an adult. If the patient is so ill that the food is obliged to be administered more frequently and in small quantities, so as to keep up a continuous supply, smaller doses of the pepsine powder may be given in a draught every four or five hours.—*Lancet*, *Oct.* 31, 1857, *p.* 435.

34.—ON DYSENTERY.

By Dr. Stephen H. Ward, Physician to the Seamen's Hospital, "Dreadnought."

[Having in the first part of his paper given a series of cases illustrative of the different varieties and degrees in which dysentery may be met with in this country, whether as indigenous or as the sequel of the acute disease contracted in tropical climates, the author observes, with reference to the treatment,]

I would remark, in the first place, that slight cases get well rapidly under rest, diet, and astringents, which, if neglected, would, under the least exciting cause, assume a more acute and unmanageable character; and that it is, consequently, important not to allow an individual to go about with a half-cured dysentery. I have found the truth of this observation confirmed by the fact that patients who, contrary to advice, had left the *Dreadnought* before a cure was quite established, had returned in a week or two with considerable aggravation of symptoms. I would observe, in the next place, that the worst cases, when not complicated with incurable organic disease, generally do well, even although the period of cure may be extended over several months. The great amount of mischief that has to be repaired, renders it evident that the cure must be very protracted. In the treatment of the more chronic cases, it is essential for the practitioner not to be enamoured of, or obstinately persevere in, any special remedy. Remedies which, when first exhibited, produce most satisfactory results, quite lose their efficacy after they have been administered for a few days or a week or two. It is a point insisted upon by all who have had large experience in this disease, and well illustrated by one or two of the foregoing cases, that most benefit is to be expected from a succession or change of remedies. There are two other practical points to which I would direct attention—viz., the suddenness with which certain cases begin to mend, that up to a time have proved most troublesome, and the importance of not giving up the treatment prematurely.

In the treatment of sub-acute and also of chronic dysentery, the first thing to be insisted upon is *rest:* a position—the recumbent—in which the bowels are best supported and kept quiet. In the sitting or standing postures there is no efficient support of the bowels; in walking, the peristaltic action is increased, and the bowels are directly irritated by the action of the abdominal muscles. Position,

alone, produces most beneficial results. I have found patients who had previously been travelling or moving about, at once relieved by rest; their stools diminishing in frequency even before any medicine was given. The action of the skin, which it is so desirable to promote, is also more evenly maintained in bed. The application of a broad flannel roller tends to carry out the indication of support and determination to the surface.

Next in moment to rest is *diet*. The invalid should be placed upon that kind of diet which gives least work to the bowels, which least stimulates peristaltic action, and which is most likely to be assimilated, should there be, as is often the case, any mesenteric complication. Drs. Abercrombie and Jackson, and Mr. R. Martin, insist strongly upon this point. The latter says, "There is no consideration of more serious importance than the diet; a diet which barely sustains the system, and which is bland and unirritating, being all that ought in any case to be allowed. Neglect of proper diet not only retards the progress of cicatrization, but it tends to reproduce and to extend ulceration, and thus to cause dangerous and even fatal relapse. A deprivation to the very verge of starvation, would, in many cases, prove salutary, by calming peristaltic action, and thus affording time for the healing of ulcerated and abraded surfaces." My own experience is in entire accordance with the above; and I cannot indorse the opinion of Dr. Graves, founded on the results of his own practice, that meat is far too much abstained from. I have invariably found the too early recourse to meat diet to be followed by marked irritation and griping, and aggravation of symptoms. I am, of course, speaking of cases where there is more or less extensive ulceration. Milk is the aliment best adapted for patients suffering from the disorder under consideration. Farinaceous articles of food are also admissible. Wine should be administered where there is much prostration.

The special therapeutical treatment will necessarily vary with the degree and character of the disease. In the sub-acute cases, and in the severer form of the dysentery of this country, I have found no remedy equal to the Dover's powder, in ten-grain doses, given every six hours, with an occasional dose of castor oil, guarded by a few drops of laudanum, for the removal of fæcal matter. The administration of a large injection of gruel, which may be combined with a little turpentine if there be tympanitis, is sometimes followed by marked relief; dislodging fæcal matter from the large bowel, and acting as an internal fomentation. If there be a deficiency of bile in the motions, a few grains of mercury with chalk may be combined with the night-dose of Dover's powder. If there is much pain and tenderness, great benefit is derived from the application of a few leeches to the anus, if the sigmoid flexure or rectum be affected, or over the ascending or transverse colon, if these be the seat of the disease. In sub-acute cases confined to the rectum, medicines exhibited by the mouth do but little good; here, leeches to the anus and soothing injections with opium are best calculated to relieve the inflammation and the resulting tenesmus, and to induce discharge of feculent matter.

In the purely chronic form of the disease, the treatment consists in the administration of mineral and vegetable astringents combined with opium, in the occasional use of aperients for the removal of fæces and foul secretions, in the exhibition of mercury or nitro-muriatic acid, for their alterative action, when the hepatic secretion is either deficient, irregular, or unhealthy, and in injections of different kinds for the relief of tenesmus, for local astringent action when the lower portion of the bowel is affected, and for the removal of matters accumulated in the intestine.

When the ulceration has been confined to the lower extremity of the colon or the rectum, and attended with discharge of blood, I have used, with a view to direct astringent action, and with much advantage, either an injection of acetate of lead, in the proportion of ten grains to two ounces of starch or gruel, or of nitrate of silver, in the proportion of three or four grains to two ounces of distilled water, followed in an hour or so after, by a soothing injection. Gallic acid and sulphate of zinc, administered in a similar way, have also done good service. The value of timely injections of gruel, or doses of castor oil, for the removal of feculent matter and putrid secretions, can scarcely be over-rated. Such accumulations not only keep up irritation, but they prevent astringents from acting upon

the ulcerated surfaces. There is, indeed, no reason why we should allow fœtid discharges to remain in contact with an ulcer in the colon more than with one occurring upon the leg. When the upper part, or more or less of the entire tract of colon is involved, astringents administered by the mouth prove most serviceable. When there is much ulceration, attested by sanious, muco-purulent stools, the mineral astringents, as sulphate of copper, acetate of lead, &c., seem to answer best. The mercury and chalk, or nitro-muriatic acid, act well in altering or promoting hepatic secretion. The emaciated forms and cachectic condition of patients labouring under this disease, generally contraindicate the exhibition of mercury for its specific action; although in one case which came under my care, amelioration dated from salivation and tender gums accidentally induced. The repeated application of slips of blistering plaster, when there is much tenderness, or any thickening of the coats of the bowel, is followed by good results. In the more advanced stages of the disease, and in the milder cases, when the stools, though frequent, are bilious, and contain but little blood or mucus, where, in fact, we have a healing but partly ulcerated and generally lax state of membrane, the vegetable astringents, as catechu, logwood, cusparia, simaruba, the gum-resins, gallic acid, &c., are very useful. Of all the vegetable astringents, I have found none to equal a strong decoction of the rind of the Bael fruit of Bengal. The plant which produces this is the Œgle Marmelos, belonging to the natural order *Aurantiaceæ*, and the pulp and rind of the fruit are native Indian remedies, to the value of which testimony is borne by Drs. Royle, J. Hooker, Wight, Mr. R. Martin, and other medical men whose experience enables them to speak to the subject. Dr. Hooker, in a letter in answer to some questions upon the point, says, "I have given the Œgle, and seen it used with great effect." The decoction which is now entered in the *Dreadnought* Pharmacopœia as Decoctum Œgles, is made by boiling three ounces of the dried rind of the fruit with a pint and a half of water down to a pint. Of this, an ounce and a half is given with a few drops of laudanum, three times a day. Although I have decidedly found this the most useful astringent in the purely chronic or milder forms of dysentery, still, as I have before said, we must not be wedded to any one remedy, but ring the changes if necessary upon several.

The possibility of a case being complicated with, and irritation kept up by hemorrhoids, must not be lost sight of. Especial treatment must be at once directed to these when they exist, or astringents, &c., will avail but little. Prolapsus ani, also, which results occasionally from the severe straining in the earlier stage of the disease, becomes, in the latter stage, itself a source of irritation and consequent diarrhœa. It may be relieved in some instances, by strong astringent injections; in others, by removing portions of the loose hypertrophied external integument with which it is constantly associated, or by the direct application of the nitrate of silver or nitric acid to the portion of thickened and relaxed mucous membrane which is prolapsed.

In the treatment of any case of old-standing dysentery, we must, as I have before said, look to the possible modifying influence of some constitutional taint. Indications of scorbutus or the pre-existence of this at some recent date, must be met by the administration of lime or lemon juice. I am, indeed, inclined to think that the citric acid which must be contained in the pulp of the Bael fruit is an element in the success which has attended this remedy in India.

When there are evidences of tuberculous diathesis, as cough, hectic, bad family history, &c., the cod-liver oil should be given in conjunction with the mineral acids. Sometimes the leaven of old intermittents still lurks in the system; and then quinine is a useful adjunct to other remedies. A course of iron, generous diet, and change of air are necessary when the dysentery has been quite cured, in order to remove the cachectic, anæmic state of system associated with the more severe and protracted cases.—*Lancet*, *Nov.* 14, 1857, *p.* 488.

DISEASES OF THE URINARY ORGANS.

35.—ON MOVABLE KIDNEYS—THEIR DIAGNOSIS AND TREATMENT.

By Dr. CHARLES J. HARE, Assistant-Physician to University College Hospital.

The affection or condition of the kidneys to which I am about to refer in the following observations is one which I believe to be not merely of some interest in itself, but also of considerable practical importance. This "movable condition of the kidneys," though not very common, is yet, I feel convinced, much more so than is generally supposed, and is, at any rate, not so rare but that instances of it must present themselves occasionally to most medical men who are engaged in extensive practice. On the other hand, I feel assured, both from the comparatively little notice generally taken of the subject in books, from the few cases recorded in the Medical Journals, and from conversations with many of my medical friends, that the affection is not so generally known as it ought to be.

An acquaintance with this condition of the kidneys will tend in certain cases to throw much light upon, and to explain a series of otherwise obscure symptoms, or may lead us to an accurate diagnosis of the nature of an abdominal tumour in cases where, if the occurrence of this state of the organ were not known, much uncertainty as to its nature might be felt; hence, too, a favourable prognosis might be given when, under other circumstances, one of a very different character would probably be entertained. All medical men well know the dread which patients always feel when by any accident they have detected a tumour in their abdomen. It has occurred to me, in one of the cases of this affection which came under my care, to be able to remove a great amount of anxiety from the patient's mind, by explaining the nature of the tumour she had detected; and Rayer states that in the cases of two medical men who suffered from this condition of the kidneys, he was enabled to set at rest the fears they entertained, though one of them actually contemplated relinquishing practice, in consequence of mistaking the nature of the disease under which he was suffering.

When the kidneys are of their usual size, and in their *normal position*, they give rise to but few physical signs. These organs may, however, occupy positions very different from their ordinary ones, and this malposition may be either congenital or acquired, and associated or not with malformation or alteration of size, and occasionally also with a greater or less amount of mobility. Thus it is by no means an exceedingly rare circumstance for the two kidneys to be so united as to form one body, giving rise to the so-called "horse-shoe," or crescentic kidney. In other but rarer instances, all trace of renal structure is wanting on one side, while the kidney of the opposite side is almost always, under such circumstances, enlarged. Again, one kidney may be in or near its natural position, and the other in some distant part of the abdomen. Thus Andral mentions a case in which one kidney occupied its normal situation, while the other was placed in the hypogastric region near the bladder. Somewhat similar instances have been described in the works of Bellini, Drouin, Lejeune, and several others, and records of such are to be met with scattered in the pages of more modern Transactions and Journals.

In Bonet's case one of the kidneys occupied the usual position of the uterus, being between the rectum and the bladder. In one detailed by Hohl, the left kidney was situated deeply at the inner side of the psoas muscle, and in two confinements retarded the progress of the fœtal head. An interesting example is quoted in the last volume of the 'Medical Times and Gazette' (1857, ii. 54). A remarkable case is reported by Sandifort, where the left kidney was situated on the last lumbar vertebra, and the upper part of the sacrum, in such a position that its upper end was adherent to the lower part of the right kidney; the two kidneys, therefore, almost formed one mass.

In some instances a kidney may be considerably displaced by the enlargement of another organ, as the liver or spleen; and Rokitansky remarks, that where such is the case the hilus of the organ "is turned upwards, as the upper portion of the kidney is necessarily most depressed." One of the most remarkable examples is that mentioned by Rayer, where the right kidney was forced low down in the

abdomen by an enormously enlarged supra-renal capsule. Cases are even on record in which a kidney has formed part of a ventral hernia.

It is obvious that malpositions of the kidneys, such as the foregoing, might cause these organs to be mistaken for other tumours, and it is with the practical view of suggesting the possibility of a condition of this kind, in very obscure cases of abdominal tumours, that I have cited these examples. Many others of a similar nature might be quoted.

Although the conditions of the kidneys to which I have just now alluded are sometimes associated with a slight degree of mobility, this is not by any means a chief characteristic of the malformations and displacements alluded to, and the organ can scarcely ever in these cases be pushed into, or even very near to, the normal renal region. But in the affection to which the following observations refer, a certain amount of mobility is the *characteristic sign*, and it is almost always such that the kidneys can at least temporarily be replaced in their normal position; while the organs themselves are not *necessarily* in any degree affected with any deviation from the natural size, form, or structure.

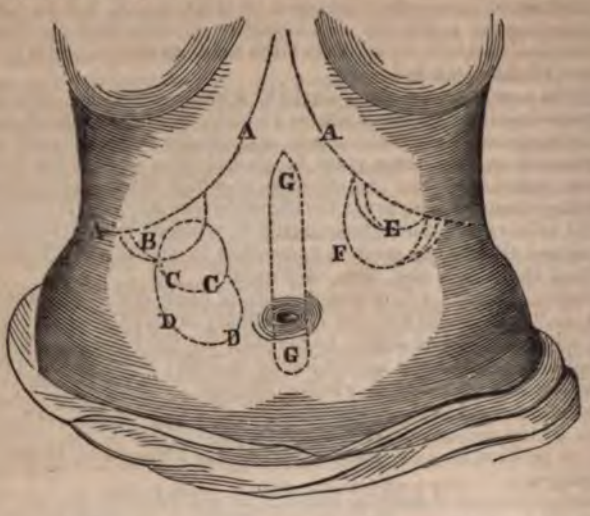
I may mention here that it occurs very much more commonly among females than males, and that mobility of the right kidney is much oftener met with than of the left, while, if the two organs be affected, the right one is usually the more so. The habitual position of a mobile kidney is almost always lower than natural, but it varies notably according to whether the patient be in the recumbent or the upright position, being lower, of course, in the latter: even when the patient lies on the back (if the abdominal parietes are moderately flaccid and not too fat), the lower ends or perhaps even the greater part of the kidney may be felt below the costal cartilages.

In examining cases of abdominal tumours, it is often more convenient to stand on the side of the patient opposite to that on which the tumour is situated. In the cases under consideration, however, the best plan to adopt is the following:—Suppose the right side is to be examined; the patient being laid on the back, with a slight inclination towards the right side, the head and shoulders being raised, and the legs somewhat elevated, the observer should stand or sit to the right of the couch, but somewhat facing the patient, and should place the fingers of the left hand on the postero-lumbar region, immediately under the last rib, at the same time gently pressing or pushing forwards that part. The ends of the fingers of the right hand should then be placed in front, just below the costal cartilages, and there also a slight pressure should be exerted; the lower end of the kidney will thus probably be felt between the two hands. The patient should next be told to take a deep inspiration, and then to expire slowly; the observer should in the meanwhile keep his hands in the same position as before, but, just at the commencement of the expiration, should press the fingers of the right hand rather sharply down towards the renal region, and he will probably detect a much larger portion of the kidney between the hands than previously: it has been detruded downwards by the action of the diaphragm. Sometimes the kidney may thus be retained between the hands, and now and then it may be detruded much lower into the abdomen, but it usually slips away from between the fingers, and is lost for a moment under the liver or in the proper renal region. In other cases, where the mobility is greater, if, at the moment of commencing expiration (after a deep inspiration), the right hand be pressed *edgewise* along the margin of the costal cartilages, and sharply downwards towards the renal region, the kidney will very probably glide or slip downwards, so that the whole of it will be below the hand—below, that is, the level of the position where its inferior border is usually situated.

In other instances, without this manipulation, the kidney is felt as a body so movable that it can be taken up, as it were, through the parietes, and be shifted or pushed to different parts of its own side of the abdomen or even moved to the front of the spine. The degree of mobility, therefore, varies very much in different cases; it may amount to but a slight departure from the usual tolerably fixed condition of these organs, while on the other hand, I have met with a case in which the right kidney could readily be moved upwards and downwards, over a space of between four and five inches, and to a considerable extent transversely across the right half of the abdomen.

The following sketches show the position of the kidneys in two instances of the

affection, during the ordinary condition of the patients when recumbent; and also exhibit the alterations effected on the position of the viscera by deep inspiration and by manipulation, as just described.



No. 1.—Mrs. D., aged 36; April 13, 1852.—A. A. A. Margins of costal cartilages. B. Right kidney, ordinary position when patient is in recumbent position. C. C. Ditto, on deep inspiration. D. D. Ditto, position to which it can be moved. E. F. F. Left kidney, changes in position of. G. G. Strong aortic pulsation, position of.

No. 2—Miss A. S., aged twenty-nine; March 25, 1857.—A. A. Edges of costal cartilages. B. Right kidney (perhaps slightly enlarged) position of during medium respiration. C. Ditto, effects of deepest inspiration. D. Ditto, position to which it can be moved. E. Left kidney, position during medium respiration. Ditto, effects of deepest inspiration and of manipulation.

The sensation on palpation communicated by the kidneys to the fingers, is such that the organs can scarcely be mistaken for any other kind of tumour; they present, more or less perfectly, the kidney shape, the lower extremity is rounded, the surface very smooth, the mass itself hard and resisting; although it can be detruded downwards, it also glides with great facility back into the lumbar region.

Pressure very generally gives rise to more or less tenderness, and may produce pain even shooting down the thigh or to the lower part of the abdomen; very generally a peculiar faint or sinking sensation is produced by pressure. When the kidney is displaced downwards a kind of void is felt by the hand applied to the postero-lumbar region, and in one or two cases Rayer mentions having observed a flattening or depression of that part. Dr. Gueneau de Mussy informed me that in a case under his care this depression was very remarkable, and was especially so when, at his request, the patient supported herself on the hands and knees. I have recently again seen the patient represented in wood-cut No. 1, and found a greater flattening or hollowing out of the right postero-lumbar region, than of the left; but the difference was very slight. Professor Oppolzer, as quoted in the 'Med. Times and Gazette' (1857, vol. i. p. 575), does not mention this condition.—*Med. Times and Gaz., Jan.* 2, 1858, *p.* 7.

36.—*Left Kidney situated in the Pelvis.*—Examining the body of a man who had died of phthisis, aged thirty-five, Dr. Isaacs found the left kidney located in the pelvis, its upper end being in contact with the bifurcation of the aorta, and its lower touching the posterior surface of the bladder, and lying on the fifth lumbar vertebra, and first, second and third pieces of the sacrum. Its right edge was in contact with the rectum, and the left with the iliac portion of the brim of the pelvis. There were three renal arteries, one coming from the aorta, and two others from the right common iliac. The kidney was of the ordinary size, but the supra-renal capsule was twice its natural size, and of the shape of a fig-leaf, and it occupied its normal position in the lumbar region.—*New York Journal, Nov., p.* 340.—*Med. Times and Gazette, Jan.* 2, 1858, *p.* 19.

37.—ON RENAL PATHOLOGY.

By Dr. George Johnson, Physician to King's College Hospital.

The subject of renal pathology owes much of its interest and much of its practical importance to the fact, that disease of the kidney is often associated, either as cause or as consequence, with many of the commonest and most fatal diseases.

Fig. 1.

Plan of the minute structure of the kidney. *a.* Artery sending an afferent branch. *a f* to *m*, the Malpighian body. *e f.* Afferent vessel. *p.* The plexus of capillaries between the tubes. *v.* The vein. *t.* The uriniferous tube. *c.* The capsule of the Malpighian body.

The diagram will serve to remind you of the chief points in the minute anatomy of the kidney, for a knowledge of which we are indebted to Mr. Bowman. You

see that the uriniferous tube ends or commences in a globular expansion, which forms what is called the capsule of the Malpighian body. The artery sends off a terminal branch, the afferent vessels, which pierces the capsule and so passes within the globular dilatation of the tube. In this cavity it breaks up into a capillary tuft, the vessels of which re-unite into a single vessel, the efferent vessel, which passes out through the capsule, and then enters a capillary plexus lying outside the uriniferous tube among its coils and convolutions. The course of the circulation through the kidney, then, as indicated by the arrows in the diagram, is from the artery, through the afferent vessel into the Malpighian capillaries, thence through the efferent vessel into the inter-tubular plexus, and from this into the renal vein. Then you will remember that the uriniferous tubes are lined by cells which have all the characters of true glandular epithelium, as seen in the second diagram.

FIG. 2.

Portion of uriniferous tube, composed of basement membrane, with a lining of epithelial cells. The clear canal within the layer of cells is equal to about half the diameter of the tube.

Within this lining of cells there is a clear canal in the central part of the tube. Of this canal I shall presently have to speak in connexion with some of the varieties of tube-casts, which occur in the urine.

You will perhaps ask what is Bright's disease? To this question I must reply by telling you first, what is *not* Bright's disease. There are certain diseases of the kidney which, by common consent, are excluded from the category of morbid changes, to which the term Bright's disease is applied. These are—1. Diseases originating in local and mechanical injuries—stone in the kidney or bladder; stricture of the urethra; blows on the loins producing abscess, &c. 2. Tubercle, cancer, and hydatids in the kidney. These forms of disease were all recognised and described before Dr. Bright published his "Medical Reports." And now with respect to Bright's disease: It had long been known that dropsy and renal disease were occasionally associated; it was also known that some dropsical patients had albuminous urine. Dr. Bright's great merit and originality consisted in this, that he pointed out the connexion between these three conditions—dropsy and albuminous urine during life with peculiar morbid changes in the kidney discoverable after life. Dr. Bright described and figured these morbid changes, showed with how great frequency they occur, with what numerous and important secondary diseases they are commonly associated, and thus, like Dr. Livingston in Southern Africa, he opened up the great field of renal pathology, which previously had been, for all practical purposes, an almost unknown region.

These morbid conditions of the kidney being known, it remained to give them a name, and various names have been proposed. Rayer uses the term "albuminous nephritis," implying the notion of an inflammation of the kidney, attended with the secretion of albuminous urine. Christison calls the disease "granular degeneration," though it is an admitted fact that some of the most characteristic Bright's kidneys have no appearance of granulation. Then it has been and is still the practice to designate these morbid states of the kidney by the name of the distinguished physician who discovered them.

Now, the term "Bright's disease" seems to involve the idea of unity, and some pathologists have attempted to prove that this is a true expression of the fact,—that all the various appearances in the kidney which have been described and figured by Dr. Bright are the result of a single morbid process in different stages and degrees of intensity. I shall have no difficulty in demonstrating by the aid of the clinical history of the cases which will come under our observation that this notion of the unity of "Bright's disease" is erroneous in theory and mischievous

in practice. In the mean time I beg you to bear in mind that the term "Bright's disease" is not strictly and exclusively applicable to any *single* morbid change in the kidney, but that under this general term are included *several forms of acute and chronic disease, which are usually associated with an albuminous condition of the urine, and frequently with dropsy and various other secondary diseases.* According to this definition of the term, a patient who has general dropsy with albuminous urine as a consequence of scarlet fever, may be said to have acute Bright's disease; while one who, after a long course of intemperance, is found to have the kidneys reduced to half their normal size, and another who, after suffering several months from dropsy, has his kidneys much enlarged and fatty, present examples of two different forms of chronic Bright's disease.

Let me now impress upon you the fact, that all the forms of Bright's disease have this in common: that the essential part of their morbid anatomy is in the interior of the convoluted uriniferous tubes, and that the epithelial or gland cells which line those tubes are the first parts to suffer change. The morbid conditions of other tissues, although of considerable interest, more especially those affecting the blood-vessels, are second in time and importance. It is in the performance of its function as a great excretory gland that the kidney becomes the subject of Bright's disease; and the disease in question has its origin in those epithelial cells of the convoluted tubes which constitute the essential part of the kidney as a glandular organ.

While the gland-cells are undergoing morbid change, there usually occurs from the vessels of the Malpighian tuft (see fig. 1) an effusion of albumen and fibrin into the cavity of the tubes. These effused products mingle with the natural secretion of the kidney, and give rise to two important signs of the existence of Bright's disease. 1st, An albuminous condition of the urine which renders it coagulable by heat and nitric acid: and 2nd, the appearance of cylindrical moulds or casts of the uriniferous tubes, discoverable on a microscopical examination of the urine. These casts are composed of fibrinous material, which having coagulated in the cavity of a tube has subsequently escaped with the urine. The different appearances presented by these tube-casts afford most valuable indications of the condition of the tubes in which they have been moulded, and greatly aid the diagnosis between the various forms and stages of Bright's disease.

As an illustration of this part of the subject, let me direct your attention to this drawing (fig. 3), in which you see represented some wax-like clear casts, some of

FIG. 3.

Large and small wax-like fibrinous casts of the tubes of the kidney, from the sediment in albuminous urine.

which are about twice the diameter of the others. The small sacs have been moulded in tubes which retain their epithelial lining (see fig. 2), and their diame-

ter corresponds with that of the clear canal which is left within the layers of cells. The larger casts, which have the full diameter of the uriniferous tubes, and a remarkably sharp outline, have been formed in tubes which have lost their epithelial lining, and with it their proper secretory function. These large casts then indicate a more serious degeneration of the tubular structure than the small ones. They are often combined in the urine of the same patient, but the existence of a large proportion of the full-sized wax-like casts in the urinary sediment is usually a sign of serious import.—*Med. Times and Gazette, Jan.* 2, 1858, *p.* 1.

38.—THE CONSTITUENTS OF THE URINE AND THEIR SOURCES.

By Dr. A. H. Hassall, F.L.S., Physician to the Royal Free Hospital, Author of "Food and its Adulterations," &c.

The following are the sources from which the different constituents which come under the denomination of the *Essential Constituents of the Urine* are derived:—

Urea is a nitrogenous compound, derived from the disintegration of some of the nitrogenized tissues, according to Dr. Prout, the *gelatinous* tissue of the body. The principal part of the *nitrogen* of the disintegrated tissues is eliminated from the system through this compound.

Creatine and *Creatinine* are also nitrogenous bodies derived, as appears from the researches of Liebig, from the disintegration of the *muscular* tissue.

Uric acid, according to Dr. Prout, results from the disintegration of the *albuminous* tissues. But it is probable that uric acid is in some cases in part derived from elements of food rich in nitrogen, imperfectly assimilated, and the same, perhaps, is also true in some cases with urea.

The *colouring matter* of the urine, which is a non-nitrogenous substance, and extremely rich in *carbon*, is supposed to be modified hæmatin, set free on the decay and breaking down of the blood corpuscles, and to be the vehicle by which much of the excess of carbon contained in the system is eliminated.

The *sulphuric acid* is formed in part by the oxydation of the sulphur contained in the proximate nitrogenized animal principles, as well as in taurine.

The *phosphoric acid* present in the urine proceeds in part from the oxydation of the phosphorus which forms one of the constituents of the nervous tissue, and especially of the brain.

The *silica* is set free by the disintegration of the osseous tissues.

Lastly, the *ammonia* of the urine is in part derived from the decomposition of the urea.

On the other hand, the constituents termed *Non-essential*, as all the chlorine of the chlorides, and great part of the sulphuric, phosphoric, and silicic acids, are derived from the articles of drink and food consumed, together with the several bases, excepting part of the *ammonia*, as *lime*, *magnesia*, *potash*, and *soda*, with which the chlorides, sulphates, and phosphates, are in combination. Part, however, of these salts are, during assimilation, received into, and imbibed by the different tissues, and become set free again on their disintegration.

Having thus briefly pointed out the origin of each of the essential constituents of the urine, we are now in a position to understand what the presence of these in the urine, either in increased or diminished amount, really signifies—viz. the extent of the decay and disintegration of the particular tissues from which they are derived.—*Lancet, Jan.* 2, 1858, *p.* 1.

39.—ON THE DISCRIMINATION OF CERTAIN ORGANIZED AND DISORGANIZED MATTERS AND PRINCIPLES IN THE URINE.

By Dr. A. H. Hassall, Physician to the Royal Free Hospital, Author of "Food and its Adulterations," &c.

On the Discrimination of Epithelium.—Occasionally, deposits appear in the urine bearing considerable resemblance to mucus or pus, and which it is impossible to distinguish by the eye alone, but which, when examined under the microscope, are found to consist almost entirely of epithelium. These deposits occur especially

in the urine of women, the epithelial scales being derived, for the most part, from the vagina. More rarely, however, the deposit consists of the epithelium of either the renal tubules or bladder. Each of these three varieties of epithelium possesses well-marked structural peculiarities, by which it may be distinguished, either as they occur separately or when mixed together.

On the Discrimination of Pus.—A deposit of pus in urine is distinguished from one of mucus, first, by its appearance; it is more opaque and cream-like, and forms a more decided and equal sediment, and when the urine is shaken, it becomes equally diffused throughout, without any ropy or tenacious shreddy substance being visible.

If, however, the urine be very alkaline, the appearance presented by the purulent deposit is very different; it becomes acted upon by the alkalies of the urine, and is then converted into a semi-transparent, tenacious substance, very closely resembling mucus, from which, by the eye alone, there is no means of distinguishing it. This change of appearance is often observed in urines which contain pus, and which have been kept for some days; the deposit, from being soft and opaque, gradually becomes transparent and ropy. The appearances presented to the naked eye by a deposit of pus in fresh urine are often quite decisive.

The outward characters of the deposit having been carefully observed, a portion of the urine, after filtration, is to be boiled in a test-tube; if this prove albuminous, there will be stronger reason for regarding the deposit as one of pus, for, with a mucous deposit, as already stated, the urine is scarcely ever albuminous.

When we come to examine a deposit of pus with a microscope, we find that the granular corpuscles are much more numerous than in mucus; that they are more readily acted upon by dilute acetic acid; and that a large number of nuclei are disclosed in them; also that there is an absence of the fibrous shreds as well as of epithelial scales.

Thus, by the several characters, external and microscopical, now enumerated, pus and mucus may in general be easily and satisfactorily distinguished when in a separate state; when, however, these deposits are mixed together, the distinction is much more difficult, and in some cases quite impossible.

When pus has been acted upon by the alkalies of the urine, and converted into a substance resembling mucus, the distinction between the two may still, in general, be effected by means of the microscope, for in this case, while there will be an absence of epithelial scales, the pus corpuscles will be found to be considerably larger than they are under ordinary circumstances.

Another difference between mucus and pus is that the latter contains a rather larger proportion of fatty matter; this is seen under the microscope in the form of small, shining droplets or spherules, either free or contained in the granular corpuscles, or the fatty matter may be extracted by means of ether. The quantity of fatty matter in mucus is very small, and frequently it is almost entirely absent. When, therefore, fatty matter is left, on the evaporation of the etherial solution of a suspected deposit of pus, there is further reason for considering that the deposit really consists of that substance.

I have already referred to the fact that pus acted upon by alkaline urine becomes converted into a ropy substance, similar to mucus; this conversion is more marked, and is almost immediately effected, by the addition to the deposit of a solution of either ammonia or potash.

Urine containing pus, is most commonly either neutral or slightly acid, and becomes alkaline only slowly, while mucous urine, on the contrary, even if acid when first passed, very quickly becomes alkaline and ammoniacal.

The liquid portion of pus, liquor puris, differs essentially from that of mucus, and holds in solution the following substances: albumen, a peculiar compound, pyin, or tritoxide of protein, which is soluble in water and precipitated by acetic acid, fat, and salts. The salts consist for the most part of chloride of sodium, with small quantities of phosphate, sulphate, and carbonate of soda, chlorides of potassium and calcium, earthy phosphates, and traces of iron, thus showing a resemblance in composition to the serum of blood.

Deposits of triple phosphate, especially when the crystals are small, are very apt to be mistaken for pus—an error which is at once rectified by the employment of the microscope.

On the Discrimination of Albumen.—The detection of Albumen in urine is very simple. A small quantity of the urine is to be heated until it boils, in a test-tube, over the flame of a spirit-lamp. As soon as the temperature of the liquid becomes raised to over 170° Fahr., the albumen will become coagulated; and if the test-tube be set aside for a time, it will become deposited, when it may be collected, dried, and weighed. The precipitated albumen is soluble in solution of potash, but insoluble in nitric acid.

There are certain sources of failure and fallacy attending the detection of albumen in the urine:

Thus, if earthy phosphates be present in excess, they will become precipitated as soon as the urine is boiled; this precipitate resembles somewhat, and might be mistaken for, albumen, from which it is, however, distinguished by its solubility in nitric acid.

Again, it has been noticed, that, when urates are in great excess in the urine, a white precipitate of uric acid is occasioned on the addition of nitric acid, which might also be mistaken for albumen.

Dr. Owen Rees remarks, "I have observed this in cases of typhus fever of low type, and also in several cases of small-pox. This precipitate is distinguished from albumen by the fact that the addition of hydrochloric acid to a second portion of the urine will occasion a precipitate equally with the nitric acid, if it be owing to uric acid, but no precipitate will ensue if albumen be present."

A precipitate likewise occurs when nitric acid is added to the urine of a patient who has taken either copaiba or cubebs, and which, at first, closely resembles albumen. This precipitate arises from the deposition of the resinous matter contained in the above-named medicines. It is distinguished from albumen by its not subsiding as distinct deposit, and by its producing a permanent opacity of the urine.

Another method of distinguishing albumen in such cases is by acidulating the urine with acetic acid, and then adding a solution of ferrocyanuret of potassium. If albumen be present, it is thus immediately thrown down; whereas in the other case, if acetic acid produce a slight turbidity, this will not be increased by the addition of the ferrocyanuret of potassium. Lastly, no precipitate is occasioned by boiling, and the urine of persons taking copaiba or cubebs evolves, when first passed, the strong odour of those drugs.

But it sometimes happens that albumen is present, and yet is not precipitated on boiling; this happens whenever the urine is alkaline, the albumen being kept in solution by the alkali. In this case it is necessary first to acidify the urine with nitric acid, and then to boil. But nitric acid in excess precipitates albumen from the urine as well as heat. It is, therefore, best in most cases, to test both with nitric acid and heat, and it is always proper to ascertain whether the precipitate which appears on boiling is soluble in excess of nitric acid or not.

In employing nitric acid, the reagent should be added in excess, as it sometimes happens that the albumen first thrown down is redissolved; but when an excess of the acid is used, the albumen is thrown down permanently, and is not redissolved.

Dr. Bence Jones has stated, that he has found a few drops of a mixture of one part of nitric to three of hydrochloric acid much more decided in its effects, and much more delicate in its indications, than pure nitric acid. This is explained in the evolution of chlorine gas by the extraction of the hydrogen of the hydrochloric acid, one of the most delicate precipitants of the protein compounds being thus set free. But this test, like the ferrocyanide of potassium test, has the property of precipitating other protein compounds besides albumen, as mucus, &c.

The quantity of albumen in urine varies greatly, from a mere trace to some grains to the ounce; and according to the quantity present, so varies the appearance of the urine on the application of heat. If the quantity be very considerable, the urine will become almost white, and nearly solid; whereas, if it be very small, the deposit may be so trifling as altogether to escape detection, until the test-tube be set aside for some hours so as to allow of the subsidence of the deposit. In this way the presence of a very minute quantity of albumen will be detected. When but little more than a trace of albumen exists in the urine, it is best to take a very large test-tube, and to boil some five or six drachms of the urine.

Albumen is also precipitated by dilute hydrochloric acid, ferrocyanide of potassium, bichloride of mercury, alcohol, creasote, tannin, and many other substances. It is not precipitated, however, by phosphoric and acetic acids which exert a solvent action upon it, nor by strong hydrochloric acid, with which, when warmed, it forms a purple-coloured solution.

For most purposes, it is sufficient to determine the quantity of albumen present in any albuminous urine, and not to carry the analysis further; in some cases, however, it is necessary to make a more complete analysis, and to ascertain the proportion of the principal constituents (especially urea) present, in which case we should proceed as follows:—

One portion of the urine is to be evaporated to dryness, and the urea dissolved out by means of hot alcohol; the alcoholic solution is evaporated in its turn to dryness in a water-bath; the residue dissolved in hot distilled water; after which an oxalate of urea may be formed, and this decomposed by means of carbonate of lime; or, in place of using alcohol, the urea may be dissolved out by means of water.

For the detection of the uric acid, a separate portion of urine (1,000 grains) should be employed, and treated thus: the albumen should be separated by boiling, the urine concentrated to about one-third its bulk, and the uric acid precipitated by means of hydrochloric acid in the manner pointed out under the head of uric acid.

It is said occasionally to happen, that albumen is present in urine in a hydrated state, in which, according to Dr. Prout, it occurs in chyle. This variety of albumen is scarcely affected at all by heat; but it is immediately coagulated by nitric acid.

Dr. Bird has pointed out (4th edit. 'Urinary Deposits,' p. 332), that when small quantities of albumen are present in urine containing a rather more than average proportion of phosphate of soda, the application of heat scarcely produces any visible opacity, until after the addition of an acid; and hence it is possible for the albumen to be erroneously regarded as existing in the hydrated state. In the latter stages of diabetes mellitus, Dr. Bird has stated that he occasionally found previously warmed urine to be rendered opaque on the addition of nitric acid, the precipitated matter appearing to resemble some of the oxygenized compounds of protein described by Mulder.

A remarkable substance allied to albumen has been detected in urine, by Dr. Bence Jones, in case of rickets. It differed from albumen by not being precipitated by either heat or nitric acid; but on boiling the urine, and allowing it to cool, a precipitate fell which redissolved on the application of heat. Alcohol added to the urine readily coagulated this substance.

On the Determination of Chyle.—Urine containing chyle is usually more milky and opalescent than when it contains only oil. In chylous urine examined microscopically and chemically, all the usual elements of chyle will ordinarily be detected, as oil, albumen, and granular organic corpuscles, resembling the white corpuscles of the blood. The albumen is to be detected after filtration of the urine by coagulation in the ordinary manner. The oil may, or may not, be visible under the microscope in the form of droplets; but if present it may always be obtained by agitation with ether; lastly, the granular corpuscles are distinguished from the fat globules by their size, granular texture, and by the action of acetic acid and ether upon them; by the first reagent, nuclei are disclosed in the corpuscles, while in ether they are insoluble, and thus distinguished from the fatty globules, for some of which they might be readily mistaken.

The milky appearance presented by chylous urine is occasioned partly by the oily matter and the granular corpuscles present, and partly by precipitated albuminous, or more probably fibrinous matter. Chylous urine when first passed, and while still warm, does not usually present the same degree of opacity and milkiness which it acquires when it becomes cold. This depends on the solidification both of the fatty and fibrinous matters present. If the quantity of chyle present be very considerable, the urine will sometimes acquire a gelatinous or semi-solid consistence, owing to the coagulation of the fibrinous element.

In some of the cases of chylous urine which fell under the observation of Dr. Prout, the albumen did not coagulate on the application of heat, but it did when nitric acid was added, and hence he was led to consider that this albumen was in an imperfect state.

The proportion of fat present in chylous urine may be so great that it may interfere with the gelatinization of the spontaneously-coagulable albumen or fibrine, but as soon as the fat has been removed by means of ether, the solidification will, in some cases, take place.

On the Determination of Fatty or Oily Matter.—Urine containing fatty or oily matter is usually, but not always, more or less turbid, and if the fat occur in connexion with chylous matter, it will not only be turbid, but it will possess a whitish and milky appearance more or less marked. Usually when a drop of such urine, especially if it has been allowed to stand at rest for some time, and it be taken from the surface, is examined under the microscope, droplets or spherules of oil will be seen, which are readily distinguished by their strongly refractive properties, as well as by their solubility in ether.

Should the presence of fat be suspected, and no globules of oil be visible under the microscope, a portion of the urine should be agitated with ether, which will dissolve out any oily or fatty matter which may be present, and which may be obtained in a separate state on the evaporation of the ethereal solution.

That the substance thus contained consists really of fat is known by its greasy appearance, its insolubility in cold water, by its breaking up into droplets when agitated with hot water, and its solubility in ether.

It is not very often that a urine is met with containing only fat, for when this is present it is usually derived from chyle, some of the constituents of which are generally present in the urine with it.

But minute quantities of fat may be present in urine, independent of chyle, as in certain forms of Bright's disease, and also without occasioning the slightest turbidity. In this case, the fatty matter is found in the cells and renal casts thrown off, and which have become deposited from the urine after it has stood for some hours.

The microscope affords the only means by which the presence of oily matter in connexion with the renal cells and tubules can be ascertained.

In the Mauritius, fatty urine is epidemic, and it accompanies a peculiar form of irritative fever.

A peculiar kind of fatty matter, to which its discoverer, Dr. Florian Heller (Heller's Arch., 1844 and 1845), gave the name of *uro-stealith*, has been detected in one instance in the urine. The patient, a weaver, twenty-four years of age, laboured under all the symptoms of calculus, and passed some small concretions, which, on examination, were found to be composed of the peculiar fatty matter in question. These concretions possessed the following characters; When fresh, they were soft, becoming when dry, hard, yellow, wax-like, brittle, and amorphous, and presenting by transmitted light a greenish-yellow colour. On the application of heat, they puffed up, inflamed, emitted a peculiar pungent odour, between that of shellac and benzoin, and left a voluminous ash. In hot water they softened, but did not dissolve; they were readily soluble in ether; the residue, on the evaporation of the ethereal solution, assumed a violet colour. On the application of a gentle heat, nitric acid dissolved them with a slight effervescence, forming a colourless substance.

On the Determination of Fibrin.—Fibrin is distinguished from albumen by its undergoing solidification when effused from the blood-vessels. It usually occurs in the urine in connexion with blood, but not always so. Sometimes it exudes from the blood-vessels of the kidneys, and solidifies in the renal tubules, in the form of casts. In other, but very rare cases, the effused fibrin does not solidify until after the urine has been voided.

When the fibrin solidifies in the kidneys, the casts are usually met with in the urine. Whenever, then, these casts are observed under the microscope, or the urine becomes at all gelatinous on cooling, and this whether it contain blood or not, fibrin is present.

Now, almost constantly, albumen is voided at the same time with the fibrin; whenever, therefore, the latter is present in the urine, the former is almost sure to be found.

There is a form of deposit of frequent occurrence in the urine, with which I have been familiar for years, and which, since it bears much resemblance to a renal cast, may here be noticed. It consists of long threads of very variable

diameter, but which are all more or less striated, showing that they are made up of fibrillæ of fibrin. I have met with them in the greatest abundance in urines depositing oxalate of lime; also in those containing excess of earthy phosphates and mucus, or which contain semen; indeed, I have found them to occur wherever irritation of the bladder from any cause exists, and as an evidence of which irritation they are to be regarded. They are found alike in the urine of men and women.

On the Determination of Keistein.—Another substance of great interest, met with in the urine of pregnant women, and with the characters of which it is necessary to become acquainted, is that known by the names of keistein and gravidine.

After the urine of a pregnant woman has been exposed to the air in a cylindrical glass vessel for two or three days (and never later than the sixth day), a fatty-looking pellicle forms upon the surface, which at the end of two or three days, when the urine is becoming alkaline, gradually breaks up, and falls to the bottom as a sediment, frequently evolving at this stage a powerful odour of cheese.

This scum or pellicle, viewed under the microscope, is seen to be constituted of three distinct elements, and to consist of a granular base in which are imbedded well-defined crystals of the ammonio-magnesian phosphate, and droplets of oil. The only essential and distinctive constituent of keistein is therefore the granular matrix. This is not acted upon by acetic acid, but is dissolved by ammonia, and this it is that evolves during decomposition the cheesy odour above referred to. When this scum is collected in any quantity, it presents a greasy and opaque appearance, resembling spermaceti, arising partly from the large quantity of triple phosphate present.

The triple phosphate may be dissolved out by means of acetic acid, and the oil by ether; the cheese-like substance being left behind.

The scum of keistein is distinguished from the ordinary phosphatic crust or scum, not only by the presence of oil and the casein or cheesy substance, but also by its not remaining on the surface beyond three or four days from its complete formation.

The urines on which keistein is formed rarely become turbid on boiling, or throw down any deposit on the addition of nitric or acetic acid, showing the absence of albumen but not necessarily that of casein, since this would not be precipitated by acetic acid unless it were present in large amount.

On the Determination of Blood.—When blood is contained in urine in amount at all considerable, its presence is sufficiently indicated by the eye alone. The urine will be observed to possess a reddish colour, and if it be set aside for some time, a reddish or rust-coloured precipitate will subside, the presence of which is so peculiar that it cannot be confounded with any other coloured deposits which occur in the urine, as uric acid and the urates.

Moreover, if the quantity of blood be very considerable, the urine will become more or less gelatinous, and if a portion of it be boiled, it will be found to abound in albumen.

When the quantity of blood is very minute, the microscope affords the only ready and certain means of determining its presence. By this instrument, if the urine be fresh, the presence of the red and white corpuscles of the blood will be revealed in any sediment from urine which has been allowed to remain at rest a sufficient time. If the hæmorrhage proceed from the kidneys, casts, containing blood corpuscles, are sometimes met with.

On the Determination of Bile.—When bile is contained in urine in considerable quantity, its presence is sufficiently indicated by the colour of the urine; this is especially the case in jaundice, in which the urine usually possesses a dark-yellowish green or brown colour, which is exceedingly characteristic.

When the quantity of biliary matter in the urine is less, the tint of the urine is only deepened and rendered of a brown or reddish hue. When this is the case, it becomes necessary to seek for the presence of bile, for which there are several tests.

One of these is Pettenkofer's test, which consists of sulphuric acid, free from sulphurous acid, and sugar. It is used as follows:—

To a small quantity of the urine, in a test-tube, about two-thirds of the bulk of

sulphuric acid is to be added, drop by drop, so that the temperature of the mixture may not be raised above 144° Fahr., at which the colour characteristic of bile is destroyed.

To this mixture a grain or two of sugar or syrup is to be added, the whole shaken, and then allowed to stand at rest a few minutes. Should bile be present, the liquid will have assumed a more or less intense red colour, with a tinge of violet. This remarkable development of colour is not due to any change effected in the colouring matter of the bile, since it takes place equally when the above re-agents are added to a solution of decolorized bile.

Should the suspected urine contain albumen, this should be first removed by coagulation and filtration, because with albumen and sulphuric acid and sugar a nearly similar colour is developed.

If the quantity of bile present be very small, the urine should be evaporated to dryness on a water-bath before the test is tried, and the bile dissolved out either by means of a little water or alcohol.

Another test for bile is that commonly known as Heller's test, which is thus employed:—

A little white of egg is added to a small quantity of the suspected urine, and after the mixture has been well shaken, a few drops of nitric acid: this causes the precipitation of the albumen, in combination with some of the colouring-matter of the bile, the precipitated albumen thereby assuming a dull-green or bluish colour.

When the quantity of bile is very small, the urine should be evaporated as before, and the albumen added to the aqueous solution.

A third test for bile in urine depends upon the action of nitric acid upon the brown colouring matter of the bile, called biliphœin. Two or three drops of nitric acid are to be allowed to fall upon a little of the urine spread out in a thin layer on a white surface. When bile is present in amount at all considerable, the mixture assumes a variety of changing and evanescent tints, green, violet, yellow, and pink, the latter colour usually predominating. As in the case of the previously described tests, should the quantity of bile present be very small, the urine must be evaporated before the nitric acid is added.

According to the late Dr. Golding Bird, it occasionally happens that bile exists in urine in a modified, and, perhaps, oxydized state, in which it does not exhibit, with the tests above noticed, the characteristic reactions, the urine becoming merely imperfectly reddened. Ammonia, Dr. Bird states, then becomes a valuable test, it immediately producing a deep red colour. There are certain fallacies attending the ammonia test, arising chiefly from the presence of vegetable colouring matters in the urine, as those of rhubarb and senna, and on which ammonia acts in a nearly similar manner.

Lastly, there is the microscopic test, which has already been described, for bile when present in urine in small quantities.

On the Detection of Seminal Fluid.—In some cases a mucus-like deposit occurs in urine, which, on examination with the microscope, turns out to be semen; this is shown by the presence of the well-known seminal animalcules and corpuscles. The animalcules are nearly always dead, owing, perhaps, partly to the length of time which usually elapses before the urine is examined, and partly to the injurious action exerted upon them by the urine itself. Spermatic animalcules are occasionally seen in urine in small number where there is no visible deposit.

Mixed up with the spermatozoa, octohedral crystals of oxalate of lime are frequently noticed. Some observers have gone so far as to state that whenever these crystals occur in urine, spermatic fluid is always present, a statement which is certainly erroneous.

In bringing to a conclusion the account of the analysis of the urine, the process given by Dr. Marcet for the extraction of "*two new acids from the human urine*" may here be described. He succeeded in procuring them, he states, whilst engaged in some researches in regard to the immediate principles of healthy urine in Messrs. Robin and Verdeil's laboratory at Paris.

"After the extraction of the urea by the addition of ether to the alcoholic solution of dried urine, the strongly acid mother liquor is evaporated at a low temperature, baryta water being previously added, to avoid the decomposition of the

organic substance contained in the solution. The acids are then set free by the addition of sulphuric acid in excess to the remaining aqueous solution, which is shaken in a flask with alcohol and ether, and allowed to stand; after a few minutes the ether rises to the surface possessing an acid reaction, though not from the presence of sulphuric acid, as it remains, with the small quantity of urea left behind by the first operation, dissolved in an inferior layer of water. The supernatant ethereal solution is decanted and repeatedly washed with water and alcohol, ether being occasionally added to supply the deficiency caused by evaporation during the above-mentioned process. An acid solution in ether is finally obtained quite free from urea and sulphuric acid, and remarkable for its beautiful pink colour when observed under transmitted light. This solution is decanted for the last time through a filtering funnel, the inferior layer of water being allowed to run out; and the acid ether is then submitted to the slow evaporation at the temperature of the atmosphere. Twelve hours afterwards the remaining liquid is found covered with prismatic colourless needles, which can be collected and dried upon filtering paper; the sides of the vessel are occupied by the deposit of an amorphous pink substance.

"*First Acid.*—The crystalline substance, when examined under the microscope, appears to assume the form of oblique rhombohedra or of prisms derived from that type, aggregating occasionally in stellate groups, but generally branching off from a main crystal or long prism. They transmit readily polarized light. This substance is soluble in ether, alcohol, and boiling water; it imparts to its solution an acid reaction, and can be again obtained crystallized by concentration. When heated upon a platina spatula, the crystals fuse, emitting a peculiar smell different from that of hippuric acid, and after charring without taking fire, finally disappear, leaving no residue. This substance, therefore, is not *hippuric acid*, to which, however, in many respects, it bears great analogy.

"*Second Acid.*—The pink deposit which occurs on the sides of the vessel during the evaporation of the mother liquor, has a very strong acid reaction: after standing for a week, it is found to contain colourless concentric groups of radiating crystals; but the very small quantity obtained did not admit of their minute examination. Robin considers the pink amorphous sediment as *urrosacine*, or the colouring principle of urine obtained by Dr. Harley. This pink substance is soluble in ether and alcohol, but not in water. Its smell is peculiarly aromatic, increasing when exposed to heat on a platina spatula; it chars, emitting an odour of burnt oil, and leaves no appreciable fixed residue. We have not observed whether iron is present."

The second acid, doubtless, consists chiefly of the urine pigment; and to the account given of its extraction, we may add the process described by Dr. Harley, by whom it has been obtained in a pure state, and who has bestowed upon it the name of "*Urrosacine.*"

"A large quantity of urine is evaporated almost to dryness over the water bath; the salts which have crystallized being removed, the colouring matter is extracted by means of boiling alcohol; the alcoholic dark-red extract is boiled, with hydrated lime added in small quantities at a time till the liquid becomes colourless. The whole is then thrown on a filter, and the compound of lime and the colouring matter thoroughly dried and washed with boiling ether, to remove any fatty substance which may be present. The lime compound is again treated with hydrochloric acid to set free the colouring matter, and afterwards with alcohol. The alcoholic solution, mixed with an equal quantity of ether, is allowed to stand for some days, and, water being added, the ether containing the colouring matter floats on the surface and is readily removed. The solution is of a port-wine colour, and still contains a little hydrochloric acid, which is removed by distilled water added to the ether in a filtering funnel stopped by the finger, so that the water at the boiling of the former is easily withdrawn by partially removing the finger. This and the after-distillation leave a pigment, which, when dried, is brownish-black, and presents a glistening appearance. This pigment, on being burnt, evolves an odour similar to burning bone, and leaves an ash which contains iron; it is composed not only of carbon, hydrogen, and oxygen, but also of nitrogen, and is obviously allied to hæmatin, bile pigment, and melanin."

I regret to have been obliged to occupy so much time in detailing the foregoing

somewhat full, but at the same time tolerably clear and simple account of the characters and properties of the urine, its composition and analysis. The details into which I have thus entered appeared to me for the most part indispensable; for unless we are fully acquainted with the composition of the urine, and the processes adopted for the detection of the more important constituents present in it under different circumstances, it will be impossible for us to discover the many deviations of composition to which the urine is liable, arising either from functional derangement or disease.—*Lancet, March* 20, *and April* 3, 1858, *pp.* 283, 333.

40.—SUGAR AND DIABETES: A CASE.

By Dr. William Budd, Senior Physician to the Bristol Royal Infirmary.

There are probably few whose attention has been much directed to the subject of diabetes who have not had misgivings, at one time or another, as to whether the common method of treating this disease by restricting the patient to a purely nitrogenous diet, or, to speak more correctly, to a diet from which sugar and its equivalents are excluded, really fulfils the true indications of the case.

Among the many circumstances that might be referred to suggesting such misgivings, there comes—

1. The strong and direct opposition in which this method very often stands to the natural cravings of the patient—cravings which, if not indulged, become, after a time, so irresistible as to drive the subjects of them to fraud, in default of other means, in order to procure some portion of the proscribed articles.

It has even been laid down as essential to the success of this method, when conducted in hospital, that the patient should be kept in a room to himslf, guarded by lock and key for that special purpose, so ineffectual have any less stringent measures been found to bar the diabetic man from the gratification of his desires for saccharine elements.

The need of such precautions as these is in itself sufficient to raise serious doubts in the mind of any thoughtful practitioner, as to the soundness of the principle on which they are founded. For, although the appetites in disease are often perverted, and are rarely to be unreservedly trusted as guides to practice, yet they are often, as in health, exponents of true wants of the system. In some sense or other, they are very real elements of the case, whatever it may be, and not seldom are much more intimate interpreters of its great cardinal relations than any evidence we may be able to draw from more recondite sources. Their suggestions may require to be modified by the results of experience, or may even be superseded by a higher knowledge; but in either case we ought to be very sure of our facts before we venture to act upon them in contravention of strongly declared instincts. In diabetes, it would be difficult to show in either of these quarters sufficient warrant for the little heed which is paid to the natural desires of the patient in the all-important matter of diet. We are certainly very far from having attained, on the one hand, to a perfect theory of the disease; and our experience as to diet, on the other, is too one-sided to enable us to found any certain conclusions upon it.

2. Another circumstance that tends very much to weaken faith in what may be called the orthodox plan of treatment is, that this plan is not only of little avail in most cases in long postponing the fatal event, but often signally fails in insuring for any length of time the specific object for which it is proposed—that, namely, of keeping down the quantity of sugar discharged with the urine.

3. M. Bernard's important discovery, that the liver forms sugar as readily from nitrogenous as from amylaceous compounds, seems to take from this plan the plea of resting upon a scientific basis.

I am aware of all that may be said in reply to these observations, and I also know that they are open to cavil in various ways; but they sufficiently show, notwithstanding, as it appears to me, that the true principles on which the dietetic treatment of diabetes should be conducted are still open to consideration. We shall see how far this view is borne out by evidence of another kind, to be presently adduced.

Many of the points here touched on are illustrated in a very striking way in a paper on 'Diabetes' communicated to the French Academy of Sciences by Prof. Andral, rather more than two years ago, and published soon afterwards in the 'Annales des Sciences Naturelles.' After remarking that a purely animal diet not only fails in a great number of cases permanently to reduce the amount of sugar discharged by the kidney, but that this amount may even go on steadily increasing, in spite of the entire exclusion of saccharine and amylaceous compounds from the food, M. Andral relates the following case in point:—

"One of the most remarkable, and at the same time one of the most conclusive, of facts of this kind, because of the absolute strictness with which the regimen was carried out, is that of a woman who, in the intimate persuasion that an exclusive animal diet could alone cure her, had the courage to subject herself to it during nearly two months, without deviating from it for a single day. During the whole of this time she ate nothing but roast or boiled meat, and drank nothing but water, to which a little alcohol had been added. At the end of the two months, she was obliged to give up this regimen, which had become insupportable to her; and, besides, she was not better. At the moment of commencing this plan, her urine yielded 27 *grammes* of sugar to the pint. During the early trial of it, the proportion of sugar fell by degrees to 20, 15, 12, and at last as low as 10 *grammes* to the pint; then suddenly, and without the remotest ground for supposing that any breach of rule had occurred, the proportion of sugar voided began again to rise. We now saw it progressively mount from 10 to 15, 20, 30, 44, 49 *grammes* to the pint; and there was, moreover, no single day in which this principle was altogether absent. Further, what is particularly worthy of remark, is that, when we first began to mix eggs, milk, a small quantity of bread, and vegetables, with the meat, and to substitute wine and water for the alcohol and water, the sugar, contrary to all expectation, began to diminish anew, falling to 30, 26, and at length to 10 *grammes* to the pint. Then again, after the lapse of some days, the regimen remaining unchanged, the sugar rose once more, until, at the end of three weeks from the first adoption of this mixed diet, the urine contained 54 *grammes* to the pint."

M. Andral adds, that this is far from being the only instance in which he has seen a large amount of sugar continue to be discharged in the urine in this disease, in spite of a purely animal diet; and he cites, among others, the extreme case of a diabetic patient "who lived entirely on flesh, and whose urine contained, notwithstanding, the enormous quantity of 82 *grammes* of sugar to the pint; and, as this man passed eight pints of urine every twenty-four hours, it follows that he expelled from his system, and consequently produced in the same period of time, as much as 656 *grammes* (or more than 20 ounces) of sugar."

In the case of which it is the principal purpose of this paper to give some account, the same general fact was observed. The amount of sugar voided went on largely and steadily increasing in spite of the rigid observance of a diet from which sugar and amylaceous compounds were excluded. But this case exhibited, in addition, the much more remarkable spectacle of a considerable and permanent reduction in this amount occurring concurrently with the recovery of the patient from a state of wasting and extreme weakness to one of good condition and comparative health, on substituting for this diet a scheme which not only included a large proportion of vegetable food, but *more than half a pound daily of sugar in substance.*

Case. The subject of this case, Joseph Snailum by name, an agricultural labourer, 18 years old, was admitted on March 19th, 1857, into Ward 6 of the Bristol Royal Infirmary, where he still remains under observation. At that time, he had already been fifteen months ill. As in most cases of the kind, his malady had stolen insensibly upon him. Frequent calls to make water, by night and day; an unnatural thirst, together with loss of flesh and gradually increasing weakness, were the first circumstances that excited his attention. He had been unable to work almost from the beginning. Meanwhile these complaints had gone on gradually increasing. For some time before he fell ill, he had been working in wet and marshy ground; but, apart from this, he could assign no distinct cause for his failing health. His immediate relatives appear to have been healthy people.

On admission, his state was very characteristic. A peculiarly dry and harsh

skin, a brown and dry tongue, ardent thirst, and a voracious appetite, were the leading symptoms. The pulse was only 68 in the minute. He was much reduced in flesh and strength. For the first week, the quantity of urine passed varied from nine to twelve and a half pints; its specific gravity, from 1039 to 1042. The presence of sugar in the urine was ascertained by the copper test, and by the extraction of sugar in bulk from the secretion. Within a few days after his admission, he was put on a diet consisting entirely of meat, eggs, a carefully prepared diabetic bread, a small quantity of butter, and a few ounces of wine. Under this regimen, contrarily to what usually happens, the diabetic symptoms began to grow worse almost from the first. The quantity of urine passed rose, in the course of a week, from nine to seventeen pints, its specific gravity remaining much the same. The patient's thirst increased, and he became daily thinner and weaker. At the end of that time, an attack of diarrhœa occurred, which lasted with more or less severity, very nearly ten days. During that interval, he took very little food, and the precise amount of urine passed could not be estimated. When the bowels had become settled, he was found to be voiding from seven to ten pints of urine *per diem* of specific gravity ranging from 1036 to 1044.

On March 31st, the stomach rebelled so much against the diabetic bread, that six ounces of common bread were allowed in place of it; and these six ounces were soon afterwards raised to sixteen. His health now began to improve somewhat, and he gained a little in flesh and strength. The diabetic symptoms proper remained much as before.

This improvement, however, was not of long continuance. In the beginning of May, he had grown so weak as to be obliged to keep his bed, and I had become very anxious about him. His tongue was very dry and brown; his pulse had become frequent; and he was much harassed by cough and pain in the chest. He seemed, in fact, to be rapidly entering upon the downward course which leads to the fatal event so common in such cases.

Many considerations which I have not now time to detail, but some of which have already been hinted at, had long made me desirous of trying what would be the effect of freely giving sugar in such circumstances.* I was turning the matter in my mind, when I accidentally saw it stated in the 'Gazette Médicale' that M. Piorry had already tried this measure in one case with very marked success. I, therefore, on May 22nd, entirely reversed my plan of treatment, and ordered the patient to be put on a varied and generous diet, with the addition of 8 ounces of sugar candy and 4 ounces of treacle daily. This change had very little effect at first either on the quantity of urine passed or on its specific gravity. It is worthy of remark, however, that what little there was was in both respects on the side of diminution. But the effect on the general health was marked and immediate. The new articles of diet were taken with great relish, and the patient improved in health and strength from day to day. What is especially worthy of attention is, that, as he became stronger, the diabetic symptoms also gradually lessened—to such a point, indeed, that on July 22nd, exactly two months after the adoption of the new scheme, only three pints of urine, of specific gravity 1032, were passed in the twenty-four hours; and yet, at this very time, the patient was taking, in addition to much vegetable food, as much *as eight ounces of sugar and six of honey daily;* the honey having been substituted, at his own desire, for the treacle previously given. Since that time, the quantity of urine passed has somewhat risen, its present daily average being from four to five pints, of specific gravity varying from 1032 to 1034. In other respects, his state is very satisfactory. He is ruddy, looks in very good condition, and declares himself to be strong and well. His tongue is moist; he no longer suffers from thirst; and his skin, from being dry and harsh in the extreme, has become soft and natural. He has increased in weight from 107 lbs., which was what he weighed shortly before beginning the sugar treatment, to 126½ lbs.

P. S. I have purposely abstained from burdening this narrative by any lengthened comments. There are few maxims in philosophy which are entitled to

* This idea was first suggested to me by my colleague, Mr. Prichard, on the simple ground of supplying to the system the particular article which is running to waste, and the loss of which appears to be the principal cause of the damage sustained by the constitution as the disease advances.

more respect than that which inculcates caution in drawing deductions from single instances. The striking result here obtained from this new mode of treating diabetes must not only be repeated in other cases of the same kind, but must be sustained for a longer period in this one, before any general inferences can be safely founded upon it. It will be observed, that the effect of the treatment was to palliate only, and not to cure. The patient is still diabetic, and may still, for all I know, die, as so many have done before him, of the disease under which he is labouring. But even although it does not go beyond palliation, I have thought the result sufficiently important to deserve being placed on record. That a diabetic man should not only recover his health by eating sugar, but that his diabetic symptoms should also very nearly vanish under the same treatment, is a fact that stands in startling antagonism to all present views, as well as to all prior experience on the subject. If this result should be found to be general, it will not only lead to an entire revolution in the treatment of the disorder, but will help in no mean degree to clear up much that is still obscure in its pathology. —*Brit. Med. Journal, Nov.* 14, 1857, *p.* 943.

41.—DIABETES TREATED BY SACCHARINE FOOD.

By Dr. George Corfe, Berners Street, London.

In the postscript to a paper lately read before the Bath and Bristol Branch on Diabetes, by Dr. W. Budd, the following judicious remark is made by that gentleman:—"There are few maxims in philosophy which are entitled to more respect, than that which inculcates caution in drawing deductions from single instances." In the spirit of that suggestion I beg leave to communicate the following particulars to the profession:—

When I perused the details of the case which forms the subject of Dr. Budd's paper, I felt satisfied that the views inculcated were based on a safe principle, and that they were not "meteoric," although they came upon Dr. T. Williams "with convulsive and startling effect," which seems to have been communicated to his two diabetic patients, on whom Dr. Williams made a short trial of the saccharine treatment.

The following case was under my care at the period when Dr. Budd's remarks were published, Nov. 14th, 1857:—

A tradesman in an adjoining county, aged 40, married, with seven children, tall, dark and spare, with black eyes and hair, and a tawny skin evincing the true phosphatic diathesis, complained, October 1st, 1857, of weakness in knees, dryness of the throat and tongue, which was covered with a dirty fur, and so clammy that he was unable to eat solids; also of thirst, with emaciation, and frequent desire to pass urine. These symptoms had been creeping on him five or six weeks, prior to which period he had enjoyed excellent health. On desiring him to pass some urine, it was ascertained to be loaded with sugar, was amber-coloured, and of specific gravity 1042. There was unequivocal evidence of solidification of the apex of the upper lobe of the right lung. The patient had lost one brother, at the age of 25, with tuberculosis, and a sister, aged 40, with diabetes. His father died at 75, and his mother is still living, aged 85. The patient is the youngest of eight children.

He was immediately put under the following treatment:—

℞. Creasoti ♏ iv, mist. acac. ʒ ss; aquæ carui ℥ i. M. Fiat haustus ter in die sumendus.

In addition to the above, he was directed to take a tablespoonful of cod-liver oil in milk, after each meal. The usual diabetic diet, consisting of underdone meat, greens, eggs, milk, and bran biscuits, was prescribed, together with a total abstinence from saccharine, farinaceous, and amylaceous substances.

The urine voided averaged five pints in twenty-four hours. I was enabled to test the urine of six of the children, and found them all free from sugar except one, a boy, 5½ years old, where the quantity was small, but marked by the usual tests.

From this period to December 1st (two months), the patient became more or

less dispirited at the manifest downward course the disease was assuming. The urine gradually increased in quantity, and the specific gravity ranged from 46 to 52, his vigour was fast waning, the disease assumed a most formidable character, and threatened to cut short his life in a few weeks. By the aid of polarized light Professor Heisch ascertained that the urine at this period contained 100.28 grains of sugar in 1000 parts, or less than two ounces in each pint. I observed, that in the most successful cases related by Dr. Bouchardat, his treatment allowed grape sugar in the form of sweet fruits, although he forbade cane sugar, as well as starch and farina. (Un Memoire sur le Diabète sucrè ou Glucosurie, par Dr. A. Bouchardat. Paris, 1846.)

This physiologist asserts that the pancreatic juice contains the principle analogous to diastase, by which it converts starchy substances into dextrine and glucose, and thereby allows their absorption into the animal economy. He insists on the following points deduced from a series of experiments:—

1st. That substances containing proteine, gelatine, &c., are digested in the stomach more especially; that these substances, when dissolved, are immediately absorbed by this organ, and from thence passed into the blood. Dr. Bouchardat designates this process *the stomachic digestion.*

2nd. Fatty substances, softened by animal heat, rendered milky or emulsified (*emulsionnée*), through contact with bile, are absorbed in the intestines by the lacteals; this he terms *the intestinal digestion.*

The solution of fecula is obtained by a principle which acts on it as diastase, and which is chiefly secreted by the pancreas; this solution first begins in the stomach, but is specially accomplished in the intestines; and the liquid which is the produce of this solution is absorbed, not by the lactiferous tubes, but partly by the vessels of the stomach, and in a much greater degree by the minute intestinal branches of the rudimentary portal vein. This Dr. Bouchardat designates *mixed digestion.* He is the first physician who proposed the moderate use of saccharine substances in diabetes; as apples, pears, cherries, gooseberries, raspberries, strawberries, raisins, and ananas. He assures us, that if we withhold amylaceous and farinaceous food from patients suffering from glucosuria, and substitute bread made from gluten, according to his formula (p. 311), the glucose formation subsides. ('Supplement à l'Annuaire de Thérapeutique' pour 1846, par le Dr. Bouchardat.)

These views, which were first put forth in 1841, are not quite in accordance with M. Bernard's recent discoveries on the property of the liver to convert fat into sugar, and the power of forming it as readily from fat as from starch-granules; such a view, as Dr. Budd remarks, takes from the present orthodox treatment of diabetes by nitrogenous substances, the plea of resting upon a scientific basis. In our present state of ignorance of the specific action of various agents employed in the assimilation of food, such as saliva, bile, pancreatic and intestinal fluids, we must be content to draw our inference, in the treatment of the disease, from well authenticated facts in practice, rather than allow our minds to be warped by theoretic views deduced from our imperfect knowledge of the physiology of organs engaged in the digestive process.

To return, however, to the details of the above case. The weight of the patient at this stage was only 114 pounds, and as the symptoms were assuming every day a more dismal character, I resolved on changing the whole line of treatment as follows. He was now directed to take, zinci sulph. gr. ij.; cinchoninæ sulph. gr. i.; extracti lupuli, gr. ii. in form of pill, with each meal in lieu of the creasote mixture, and to continue the cod oil. He was desired to use the following articles of diet:—Fat mutton and beef, and the same meats in the form of soups; fresh white fish, boiled; oysters, poultry, game, tripe, and any one of the following vegetables, daily; parsnips, turnips, carrots, spinach, greens, brocoli, endive, lettuce, celery, and to abstain from bread and all farinaceous food and potatoes. His drink was directed to consist of a cup of coffee, with half an ounce of sugar candy, in the morning; a tablespoonful of rum in a glass of water, with the same quantity of sugar candy and five grains of carbonate of ammonia, at luncheon, and two glasses of claret at dinner. In the evening he was desired to take one ounce of honey on bread in lieu of butter, and to sup on boiled milk, with an egg, &c.

After having continued this line of treatment from December 17th to the 30th, the following results were obtained:—The urine increased from four to eight pints in twenty-four hours, the specific gravity was 1050, it gave proof of containing, by polarized light, 112 grains in 1000 pints, or rather more than two ounces in each pint, and yet he had not lost in weight more than one pound. It should be here remarked, that he frankly acknowledged that he had not followed the directions of treatment in so strict a manner as he could have wished: for although he felt stronger and more lively in mind, he had been to several festive parties, and had eaten freely of potatoes and bread on several occasions, and had drunk beer or bottled stout. But, after being reprimanded severely for his indiscretion, he faithfully adhered to the prescribed form of dietary. The pills were now increased one grain of each of the sulphates in strength, and on the 17th of January the urine had a specific gravity of 1038, containing 83 grains in 1000 of sugar, that is, a diminution of more than a quarter of an ounce in each pint of fluid, and for eight days prior to this report the quantity never exceeded four pints in twenty-four hours. I shall here add the testimony of the patient.

"Jan. 16th, 1858.—My Dear Sir. With this you will receive my report. I have not fully complied in abstaining from bread, but the portion I have taken has been but small; when I have eaten it, I have previously toasted it. My strength I now find daily increasing. At first the pills made me feel very poorly, but they check thirst, reduce the quantity of urine, &c. I have just been in the scales, and I find that I weigh 119 pounds.

"P.S. I took some Scotch oatmeal one or two nights. Is that wrong?"

It was obvious from such a report and the analysis, that the disease was not aggravated by the present treatment, and I therefore begged of him to abstain wholly from all farinaceous food, including bread, until the next report, which has been forwarded to me this day, January 29th, and which I transcribe.

"My Dear Sir,—Enclosed you will receive my report, which I think will speak for itself. I can now reverse my tale and say, 'The bones which were once seen are now hidden from sight:' I am, of course, with this increase of flesh much stronger. I feel some little difficulty in walking up stairs, but not to the extent I formerly did by any means; I get a free perspiration, my appetite is good, and the cramps are quite gone. When I meet any one whom I have not seen for eight or nine days, they want to know if my face is not swelled; my clothes, which hung about me as though not belonging to me, I am obliged to alter in the buttons. I have found a good substitute for bread in parsnips. The fat ham had the desired effect on my bowels; of course, it checked my progress in weight, which has gradually risen thus:

	Weight. lbs.	Urine. Pints.	Fluids taken. Pints.
1858. Jan. 15	120	5	5
" 18	121	$4\frac{1}{2}$	$4\frac{1}{2}$
" 21	124	3	3
" 25	$129\frac{1}{2}$	$2\frac{1}{2}$	3
" 28	132	$3\frac{3}{4}$	$3\frac{1}{2}$

"I can now attend to business comfortably; I can walk four miles an hour well. Perspired freely last night in bed, and exertion to-day induces a moisture also."

The report gives a daily account of the quantity of fluid taken and the amount of urine voided: they are here set down by way of contrast with the increase of weight.

The analysis of the urine this day confirms the foregoing remarks on the positive improvement in health. Instead of presenting its usual amber-coloured clear character, it is now muddy, and deposits some lithates. The muddiness is removed by heat. It is acid, and of specific gravity 1033, and is found to contain only twenty grains per 1000 of sugar; indeed, the indications are now so faint, Mr. Heisch observes, that it is not easy to define the precise quantity, as before, by means of polarized light.

I refrain from any comment on the above facts, which are quite unprecedented in the treatment of this intractable disease. Upon a review of upwards of one hundred cases of diabetes, it has never fallen to my lot to witness such a marked,

rapid, and satisfactory improvement, by any line of treatment, as that now under consideration.—*British Medical Journal, Feb.* 6, 1858, *p.* 102.

42.—*Employment of Sugar in the Dyscrasia attending Bronzed Skin.*—Dr. Todd, in a case of bronzing of the skin, now under his treatment in King's College Hospital, has ordered the free dietetic employment of sugar. The patient, a woman, is believed to have derived considerable benefit from it in relief to the malaise and debility from which she suffered. The theory of the treatment is, we believe, based on the belief, founded on analysis of the blood, that the sugar-making function of the liver is interfered with by the disease. The suggestion is certainly well worth a trial, since the treatment can at any rate do no injury.—*Med. Times and Gazette, Jan.* 23, 1858, *p.* 89.

43.—ON THE MODE OF DETECTING SUGAR IN THE URINE, AND ON THE DIFFERENT NATURE OF CERTAIN FORMS OF DIABETES.

Dr. A. Becquerel, Physician at the Hospital of La Pitie, and Professor "Agrégé" to the Faculty of Medicine of Paris, has recently submitted a notice on this subject to the Medical Society of the hospitals here.

In this communication he says, "Five years ago, in my 'Treatise on Pathological Anatomy,' and four years ago, at the hospital of Laribosière, in a series of lectures reported in the 'Moniteur des Hôpitaux,' I pointed out the following facts:—"First, that nearly all urines become discoloured, impart a green colour to, and even precipitate the cupro-potass solution of Barreswill, or that of Frommerz, if heated with these re-agents. Second, that a great number of these same urines become brown, in like manner, on the addition of caustic potass, however pure that may be.

"Nearly a year ago, in a new series of lectures delivered at the hospital of La Pitie, I again strongly insisted on the erroneous conclusions to which the reaction afforded by these tests might lead; an opinion which was merely that prevailing among chemists who had paid attention to this subject at the time. I shall content myself here by showing you that nothing is more easy than to avoid this source of error, and that there is at our disposal a much more sure, expeditious, and certain method of detecting the presence of sugar in the urine than is usually employed.

"We take a certain determinate quantity of urine, say 60 grs.; this we treat with a small quantity of solid and crystallized acetate of lead, say 4 grs.; on heating this mixture, there is immediately formed a copious precipitate of a dirty white colour; the liquor is then to be filtered, and the solution treated by sulphate of soda in excess. If, for example, we have added four grs. of acetate of lead, we add 8 grs. of sulphate of soda. This being done, the mixture is again heated, and sulphate of lead is deposited; we then filter once more, and there is afforded a clear transparent liquid, which contains the sugar, when there is any, and some unimportant salts. The liquid thus obtained is neither acted on by the cupro-potass re-agents, nor browned by the caustic potass, *unless* sugar is present. These two re-agents are in this way perfectly reliable, very accurate, and afford no results when no sugar is contained.

"Should the urine under examination contain albumen, it is immediately coagulated by the acetate of lead at the same time as other organic matters, and gives no further trouble.

"Thus, in all cases where it is desired to ascertain the existence of sugar in the urine, whether along with albumen or not, we possess two excellent re-agents in the cupro-potass solution, and in the caustic potass itself; only we require, in the first place, to treat the urine with the acetate of lead and the sulphate of soda, by which means we get rid of all such matters as decompose or discolour the cupro-potass or caustic potass tests.

"Since January, 1855, up to the present time, the urine of all the patients under my care—and these have amounted to nearly 2000—has been examined according to

the above method. But besides this, in all cases where the presence of sugar was determined, there was also an examination made by means of the polarimeter, in order to discover the precise quantity of that principle contained in every thousand grains of urine. These numerous cases have afforded some curious results which I would desire to lay before the Society.

"Two species of diabetes appear to exist, viz. idiopathic diabetes, or diabetes properly so called, and symptomatic diabetes. With reference to diabetes properly so called, I have here nothing to say;—it is a disease special in its causes, and having an origin, a progress, and a termination altogether peculiar to itself. That to which I at present allude is a disease of a somewhat different nature, viz. symptomatic diabetes. By this name I would refer to a certain number of cases, in which the presence of sugar in the urine constitutes an accessory or supervening symptom. This is a symptom which, like albuminuria, is common to very different diseases, and one which would never be suspected unless the urine were submitted to an examination.

"The characters of symptomatic diabetes are as follows:—

"1st. The quantity of sugar contained in the urine is never very great, although I have frequently found as much as 25 or 26 grs. in 1000, which is a pretty considerable proportion, but less than exists in idiopathic diabetes, where it often reaches as high as 40, 50, 60, and even 80 grs. in 1000.

"2nd. The urine is very little or never increased in quantity.

"3rd. Although the density of the urine is no doubt increased, yet it is only to a very slight extent.

"4th. The sugar does not alter the other chemical elements contained in the urine.

"5th. There are no phenomena present attributable to the fact of sugar being contained in the urine; there is neither the increase of appetite nor the immoderate thirst of idiopathic diabetes.

"Symptomatic diabetes shows itself occasionally in diseases of the brain and spinal cord, of the liver, of the digestive apparatus; in disease connected with parturition and lactation; and in other affections of various descriptions."—*L'Union Médicale.—Edin. Med. Journal, Nov.* 1857, *p.* 460.

44.—THE GLUCOMETER.

This is an instrument introduced by Dr. Garrod for determining the amount of sugar in diabetic urine. The principle upon which the glucometer is constructed rests upon the fact that glucose sugar ($C_{12}H_{14}O_{14}$) when boiled with carbonate of potash gives rise to an amber colour, the depth of the tint depending upon the amount of sugar present. The apparatus consists of a standard, a graduated tube of the same calibre as the standard, and an accurately divided minim measure. The standard contains a solution having the exact tint produced by half a grain of diabetic sugar to the fluid ounce: it should be kept from the light when not in actual use.

Method of employing the Glucometer.—1. *Qualitative Analysis.*—Put into a test-tube a small quantity of the urine, and add about an equal bulk of liquor potassæ, Ph. Lond.; heat over a spirit-lamp, and allow the fluid to boil for half a minute. By this operation (Moore's test) we ascertain whether sugar is present; and, by observing the amount of colour, we have a guide to the subsequent dilution of the urine, which is often necessary before proceeding with the quantitative analysis, in order to avoid having the graduated tube of inconvenient length.

2. *Quantitative Analysis.*—If the tint in the above experiment be not deeper than an amber red, no dilution will be required before it is examined; if of a dark red the urine should have about its own bulk of water added to it; if of a reddish brown, three times its bulk; if of a dark brown, seven times, &c. This dilution may be readily effected by means of the graduated tubes, employing about a drachm of the urine for the experiment. Having made the necessary dilution with distilled water, accurately measure in the minim-glass half a drachm (30 minims) of the liquid, and add an equal amount of the solution of carbonate of potash,

introduce these into a small flask, or large test-tube, and wash out the measure with about a drachm-and-a-half of water. Heat to the boiling point, by means of a spirit-lamp, and keep the liquid at that temperature for five minutes. If the contents of the flask be found to have a colour much above that of the standard, water may be added; and when somewhat cool, the whole transferred to the graduated tube, and dilution carefully made until the tint exactly accords with that of the standard. Care should be taken, on each addition of water, to ensure a thorough admixture of the fluid in the tube. All the required data for determining the amount of sugar are now obtained. Suppose a sample of urine when treated with liquor potassæ to give an orange-red colour, and that it has afterwards been increased to four times its original bulk by the addition of three parts of water; again, suppose that the half-drachm employed in the quantitative analysis requires to be further diluted, so as to occupy 6½ drachms before the exact tint of the standard is obtained; such urine would contain 26 grains of sugar per fluid ounce; for the first dilution increases the bulk fourfold, the second 13: therefore four times thirteen, or 52 half-grains, or 26 grains of sugar are present. If a portion of the 24 hours' urine is made use of, and the total quantity measured, the daily elimination of sugar can be readily determined. The method of ascertaining whether the tint of the liquid corresponds exactly with that of the standard, is to hold the tubes side by side, directing them to moderately bright light, such as that of a white cloud; sometimes a thin piece of writing-paper placed behind the tubes enables the identity of tint to be better observed. Lamp or gas light is not well adapted for the experiment. Should the urine contain but very little sugar, some slight alteration in the process may be made. One or two drachms may be heated with but a small quantity of the solution of carbonate of potash, and without the employment of more water than is sufficient to wash out the measure; when the amount of sugar is less than half a grain to the ounce, the glucometer can only give approximate results. The apparatus had been constructed for Dr. Garrod by Messrs. Coxeter.—*Medical Times and Gazette, Dec.* 12, 1857, *p.* 621.

SURGERY.

AFFECTIONS OF THE BONES, JOINTS, ETC., WITH VARIOUS CAPITAL OPERATIONS ON THE LIMBS.

45.—ON THE PATHOLOGY OF ARTICULAR CARTILAGES.

By Thos. Bryant, Esq., Assistant Surgeon to Guy's Hospital.

Upon inquiring into the pathology of diseased joints, the unsatisfactory information respecting the diseases of articular cartilages as a whole, has urged me to investigate their pathology; and fully appreciating the labours of my predecessors, I can now, with some confidence, describe the various morbid changes to which this structure is liable. And believing that the conclusions formed with much care may, perhaps, prove of benefit to others, I have been tempted to compress them into the following pages.

Articular cartilages, standing as they do upon the confines of the two anatomical divisions of tissues, hard and soft, offer to the anatomist an unusually good opportunity of examining the process of cell-development, and afford equally to the pathologist the means of studying the changes which nucleated cells undergo in their degeneration or decay.

The difference between what are called vascular and non-vascular tissues (to which latter division articular cartilages belong), is now known to be so slight, that the method by which this structure is nourished is no longer doubtful. The blood being conducted by its ordinary vessels to every tissue, each tissue extracts, or rather imbibes, the material requisite for its nourishment; the only difference between the vascular and non-vascular parts being determined by the spaces through which this process of imbibition takes place (the vessels in the latter not perforating its substance). The nucleated cells, however, through which all structures are formed, and grow, still absorb from the vessels, however distant, their quantum of nourishment; and in articular cartilages these cells are as active as in any other tissue.

The method by which these blood-vessels supply the articular cartilages may be thus briefly described, the necessity to understand their vascular supply being evident when their pathology is discussed. That the principal source is derived through their bony attachment, the investigations of Birkett, Toynbee, and others have well demonstrated. The vessels at their bony base form loops, and yield the required nourishment "somewhat in the same manner as the epidermis scales are 'nourished' upon the vascular loops of the corium." The vessels ramifying in the synovial membrane, and at their circumference, furnish to their adjacent surfaces a sufficient supply.

It is clear, then, that structures deriving nourishment through other although adjacent tissues, must depend much upon the integrity of *these* tissues; and that if any disturbing cause should arise to prevent or arrest their powers of nutrition, the same, if not increased, perversion of nutrition must ensue in the tissues thus secondarily supplied. In the cartilages of joints such a result may be most admirably witnessed.

The *Diseases* to which articular cartilages are liable may be thus classed. Like other tissues they may *hypertrophy* or *atrophy*, using the latter in its simplest sense. Inflame and ulcerate they cannot, as the presence of vessels in the tissue is generally considered necessary for such processes. But to *granular*, *fatty*, and *fibrous* degeneration they are peculiarly liable, and in these forms of degeneration

On June 15th the patient is reported as being in much better health. The wound was granulating healthily, and she was beginning to obtain some power of flexion and extension. The splint was now entirely left off.

On Aug. 5th the patient was discharged, with the wound quite healed and possessing some little power over the limb.

A few days ago the patient presented herself at the hospital. Her general appearance was much improved, and she has now almost perfect power of flexion, extension, and rotation.

Case 1.—Jane P——, aged fourteen, a slight girl, with florid complexion, was admitted on the 16th of June, 1857, with disease of the left elbow-joint. When a month old, abscesses formed in the neck and both elbow-joints; that in the right subsided, and perfect motion was obtained after a short period; but the abscess in the left joint led to complete anchylosis. The joint remained in a quiescent state up to five years ago, when an abscess formed in its neighbourhood; this, however, subsided, and she experienced no inconvenience until a month before admission, when another abscess formed on the inner side of the joint, which burst, and has continued to discharge ever since. The forearm is slightly flexed on the humerus; the elbow is perfectly locked, very tender, and slightly enlarged. Just over the internal condyle there is an ulcer about the size of a sixpence, through which a probe can be passed down to the bare bone. On the posterior surface of the joint, and on the outer side of the forearm, there are old cicatrices.

June 27th. Dr. Snow having administered amylene, Mr. Fergusson proceeded to excise the joint. Having made a vertical incision about six inches long at the back of the joint, he dissected back the integuments on either side, until the joint was fully exposed. During this dissection no ulnar nerve could be discovered. He then applied the saw to the olecranon at its junction with the shaft of the ulna, and having sawn through the bone in that position, the saw was again applied to the humerus just above the condyles, and the piece of bone intervening between the two cuts removed. At this stage of the proceedings a large quantity of pus spurted out with great force from the neighbouring joint. Some diseased tissues, implicated in the abscess, were then dissected off. No ligatures were required, and the edges of the wound were brought together by two stitches.

30th. The patient having gone on very well during the intervening days, the arm was placed in Mr. Heath's splint (before described), and flexed once or twice upon the humerus. The bones were kept well apart from one another; but after a time the arm and hand became rather swollen, and

On July 3rd the splint was taken off, and the arm placed on a straight splint.

On the 7th, Heath's splint was again applied, and the arm now and then flexed, the extension caused by the splint much lessening the pain of that operation. The wound assumed a healthy appearance, and the patient was in a very satisfactory state.

On the 20th, the wound was reported as "looking very healthy," and at each dressing the arm was flexed and extended, not much pain being inflicted.

At the beginning of August the side splints were taken off, and a straight splint in front of the joint was substituted. The wound now scarcely discharged at all. The arm was flexed, extended, and rotated at each dressing. By the middle of the month the patient had regained some power of motion in the fingers and wrist.

On the 25th August the splint was left off, and the arm was supported in a sling.

About the second week in September, when she left the hospital, the wound had almost closed. There was plenty of motion in the joint, and she could raise the hand to the head.

Case 3.—Wm. R——, aged twenty-six, a florid, robust-looking man, was admitted on August 19th, 1857, with disease of the right elbow-joint. The patient states that up to about six years ago he had always enjoyed good health. About that time he contracted syphilis for which he was mercurialized. This was followed by an eruption accompanied by pain in the limbs and joints, more especially the right elbow and knee. Shortly after he found that his right elbow was swollen and painful. This in about three months yielded to treatment, but he was never able to place the limb in a perfectly straight position, nor could he flex it

sufficiently to touch the shoulder without great pain. In May last he had a return of the pain and swelling in the joint. This continued unabated up to about five weeks ago, when an abscess formed in the joint.

On admission, the swelling was considerable about the elbow, and the contour of the joint entirely lost. The forearm was slightly flexed on the upper arm, and on pressing the forearm upwards a peculiar elastic feeling was given.

Aug. 20th. An incision was made midway between the condyles of the humerus, and a considerable amount of offensive matter discharged itself. A probe introduced through the wound passes readily into the joint.

30th. The patient being placed under the influence of chloroform, Mr. Fergusson proceeded to excise the joint. As in the other cases this was accomplished by making the vertical incision at the back of the joint. The ulnar nerve being carefully hooked back and secured from injury, the humerus was sawn through just above the condyles, and the olecranon and the head of the radius were also removed. Much bleeding occurred during the operation.

Sept. 1. Heath's splint was put on, and sufficient extension made with it to separate the ends of the bones. The wound looks healthy, and the patient suffers little pain.

7th. The arm was bent for the first time, and caused very little pain.

10th. The splint was removed to allow the swelling to decrease.

20th. The splint was left off entirely, as it was thought that the effect it had had in keeping the bones asunder was sufficient to secure perfect motion in the joint. The patient can flex the arm a little himself, and with slight assistance can raise his hand to his mouth. The wound is looking very healthy, having closed up to a great extent in a surprisingly short period of time. The patient's health is much improved, and a most favourable result is expected.—*Lancet*, *Nov.* 28, 1857, *p.* 546.

47.—ON EXTENSION OF CONTRACTED KNEE-JOINT.

By Holmes Coote, Esq., Assistant Surgeon to St. Bartholomew's Hospital, &c.

[The knee-joint differs from that of the elbow in the readiness with which partial dislocations occur in every form of severe disease where parts have got into a quiet state, so that attempts may be made to bring the limb straight. Two distinct objects have to be attained, viz:—]

1. The elongation, or rupture, of those structures which hold the bones in their abnormal position.

2. The readjustment of the bones to their proper bearing; in other words, the reduction of the luxation.

Let us first inquire into the condition of a limb in which the knee-joint has long been the seat of disease. In almost every case the tibia and fibula are drawn backwards by the hamstring muscles, with a strong direction outwards, due to the preponderating action of the biceps flexor cruris, the tendon of which is usually much more tense than those of the inner hamstring muscles. Upon the removal of the integument from such a limb, we find the tendons of natural colour and appearance, but the muscle pale, and adherent to surrounding parts, or imbedded in a quantity of effused fibrine or serum. The internal lateral ligament is usually softened, spread out, and much changed from its natural structure; the external lateral ligament is softened and elongated, but entire. The anterior crucial ligament (which extends from the outer condyle of the femur obliquely inwards to the tibia, and has for its function to control or limit the rotation of the leg *outwards* in the flexed position) is usually very much softened and elongated, but entire; in other cases it has given way. The posterior crucial ligament is less subject to change. The synovial membrane, after passing through its period of thickening, becomes absorbed, not uncommonly contracting adhesions so as to subdivide the articular cavity into several compartments; the semilunar cartilages undergo early, and often complete, absorption. The absorption of articular cartilage is generally universal; the surfaces of bone between the inner condyle of the femur and articular surface of the tibia are rough, and denser than natural; the corresponding surfaces on the outer side of the joint are generally rougher, and

it is here, owing to the greater movement which exists as contrasted with the inner condyle, that we may find portions of necrosed bone or deep furrows in the osseous tissue. I have seen the opposed bony surfaces so deeply furrowed as to lock into one another. The bones are often very vascular; but when the joint is in a perfectly quiet state, the osseous tissue is found harder than natural. When from any cause, such as the extreme activity of the disease, or from want of proper treatment, the cancellous texture has been acutely inflamed, there may be an abscess in the head of the bone, or ulceration, or necrosis to a greater or less extent. Those opaque masses sometimes found imbedded in the cancellous texture, and once called "tubercle," are now more properly recognised as inspissated pus.

Osseous anchylosis is a rare occurrence. The very fine and comprehensive collection of "diseased joints" in the museum at St. Bartholomew's Hospital contains only seven specimens in which osseous anchylosis has taken place in the knee; and of these one is very partial, and four illustrate that occurrence the more commonly seen, namely, union of the patella to the outer condyle of the femur; thus there are few specimens in which the tibia and femur have "grown together by bone."

There are two methods by which we may render straight a contracted knee-joint:

1. By forcible extension.
2. By gradual extension.

With either of these may be combined the subcutaneous section of such tendons or ligamentous bands as interfere with the object in view.

In former times, surgeons looked only to the immediate effects produced by the manipulation as regarded the shape of the limb. We now take into consideration the morbid condition of parts within the joint, and study to obtain those changes which will allow the bones to resume their natural position, bearing in mind that the semiflexed condition of the joint is one which gives the patient ease during the acuter stages of disease. No surgeon in his senses would now forcibly tear through morbid adhesions, and, bringing the contracted limb straight, attempt to keep it so by putting it into an immovable case. He would know, or at least ought to know, that, even if he could keep the limb straight by means of apparatus (a question extremely doubtful), the ends of divided tendons and torn ligamentous bands are held apart, widely separated, and can never again unite so as to serve as supports to the limb. He also is aware that should the apparatus require removal, owing to erysipelas, or any inflammatory disturbance, and the leg again become bent so as to permit of the reunion of the divided and torn structure, the new matter will again contract like any other cicatrix. The violent extension of the knee-joint, combined with the subcutaneous division of tendons and fasciæ, as practised by Dieffenbach and Louvrier, was followed, as is well known, by even fatal results, and, so severe was the pain, that I doubt whether other surgeons would have prosecuted the inquiry, had it not been for the discovery and employment of anæsthetics. In vol. xl. of the "Transactions of the Royal Medical and Chirurgical Society," my colleague, Mr. Broadhurst, has suggested a practice, of which the following are the steps. He first subcutaneously divides those tendons likely to interfere with the extending process. When the punctures are healed, namely, from the sixth to the eighth day, the patient is placed under the influence of chloroform, and the adhesions are ruptured by flexing, and again extending the limb. The limb is then bandaged and put in a trough splint, and subsequently again flexed almost to the same angle as before the operation. In the course of two or three days gradual extension is commenced and continued. Passive motion under chloroform is subsequently practised at intervals of from two to three days. He thus divides the tendons, and tears through the adhesions subcutaneously; then readjusting the divided and torn structures, he allows adhesion to take place, and subsequently extends the soft uniting medium.

Although I think, as probably does Mr. Broadhurst, that this proceeding is unnecessarily severe for the greater number of contracted knees, and is more particularly adapted for those cases where bony anchylosis resists the ordinary extending force, I fully concur with him in his introductory remarks, where he says "the excision of articular surfaces is at present of so frequent occurrence, and is undertaken not solely as a substitute for amputation, but is performed

where amputation would never be thought of, that I beg to call attention to the forcible rupture of anchylosed surfaces in cases where the active disease has subsided." Excision of the bones of the knee has lately been twice performed in London under these circumstances; in both there has been a fatal result.

The gradual extension of a contracted knee, either with or without the subcutaneous division of tendons, combined with the application of force, from time to time, sufficient to rupture any bony union, or more than usually resisting band, appears to me the safer and more effectual proceeding. It has been proved, by long experience at the Orthopœdic Hospital, by Mr. Tamplin, that scarcely any structures, however hard, can long resist the action of moderate, yet unremitting force. The firmest bands will yield; and in the case of fibrous cords, this passive elongation is permanent, *i.e.* there is no fear of recontractions. The tendons alone require subcutaneous division, for extensions might elongate a muscle, which would become shorter as the force ceased to act.

Another advantage resulting from gradual extension is as follows. By the application of a proper instrument, in which mechanical provision is made not only for flexion and extension, but likewise for abduction, and rotation, the displaced bony surfaces may be so acted upon as to be directed into their normal relations, and thus to lose their dislocated position.

I affirm that sufficient attention has not yet been paid to the gradual extension of contracted joints, especially as regards the knee. Surgeons seem to me to have wanted patience; to have neglected improvements in surgical apparatus; in former times to have had recourse to amputation with the same premature haste as they now perform excision. I know a patient, at the present moment under the care of my colleague. Mr. Tamplin, who came to the Royal Orthopœdic Hospital at the age of twenty-seven, having had contracted knee for twenty-five years. The leg came down with properly applied and moderately powerful extending force, and the patient, who had never walked without a crutch, has now perfect power of progression. In the "British Medical Journal," January 30, I have related the case of a girl in whom, after subcutaneous division of the biceps flexor cruris, I brought down the leg, after fourteen years' contraction, by the application of moderate force. In the same number are the particulars of a young girl in whom a limb once so much contracted that amputation was proposed, is now becoming straight by the same means.

William L., aged 19, is attending, under Mr. Tamplin, as casual out-patient at the Orthopœdic Hospital, whither he walks unaided from some distance, having suffered from most severe disease of the knee-joint. Six years ago, the patient stated, there were thirty fistular openings, leading to diseased bone, in and about the knee, and amputation was recommended both in public hospitals and by private practitioners, a measure which was steadily declined. At the present time, the limb is nearly straight, held so by the usual apparatus; all the openings have healed but two. There is no pain, and the natural health has returned.

We are told in most positive terms that there are certain thickened conditions of the synovial membrane, which are in their nature incurable. I deny the proposition. The thickened membrane will in time be removed, leaving the knee bent and anchylosed. In this condition, at the proper moment, steady extension, without violence, will enable the surgeon, in by far the greater number of cases, to straighten the limb so that it may again be used by the patient as a means of locomotion.

I know that in thus condemning the forcible extension of contracted joints, except in very exceptional instances, I lay myself open to the reply which the numerous cases of reported cures in the public journals afford. In answer, I could speak of forced extension five times repeated, and unavailing at last, but productive of high constitutional derangement; of erysipelas succeeding a similar attempt, and of the rapid recontraction of the limb; of dormant disease roused with such activity, that thoughts of amputation came uppermost in the surgeon's mind. Such dangers cannot be ignored; they perplex and distress the surgeon; and I feel strongly that any plan, which offers some security against their occurrence, is worthy of the support and consideration of the profession.—*Brit. Med. Journ., April* 3, 1858, *p.* 261.

48.—ON THE TREATMENT OF CHRONIC HYDRARTHROSIS OF THE KNEE-JOINT BY PUNCTURE AND INJECTIONS OF IODINE.

By Robert Macdonnell, Surgeon to St. Patrick's Hospital, Montreal.

[At page 143 of our last volume, we published some observations by Dr. Macdonnell on the above-named subject. We now add another successful case, with a few important observations on this affection.]

Case.—J. W., aged 13, was sent from a town in Vermont, to consult Dr. Howard, the oculist, for an affection of the eyes; he was admitted into St. Patrick's Hospital, where it was observed that in addition to the disease of the eyes, he also laboured under a chronic hydrarthrosis of the left knee-joint, which had caused lameness, and was attended with much pain at the inner side of the joint and at the insertion of the ligamentum patellæ; the joint was swollen and globular in appearance; the increase in size amounted to nearly two inches more than the healthy articulation; the swelling was soft, fluctuated on pressure, and the fluid could be forced from the lower part to above the patella, on the front of the femur; a crepitating sensation was experienced when the joint was minutely examined. There was no heat of the joint nor discoloration. He was placed under a mild mercurial course, combined with blistering, stimulating liniments, rest in the recumbent posture, starch bandages, strapping with the mercurial plaster, and the mercury was followed by a course of hydriodate of potash. After a lapse of nearly two months no improvement was perceptible, and I resolved to puncture the joint and inject with iodine; accordingly this operation was performed in the manner already described, on the 1st of July; no pain followed the operation. About four ounces of fluid were drawn off; it was transparent, of a light straw colour, and coagulated slightly on cooling. The opening was closed with adhesive plaster, a wet roller was carried round the limb from the toes to above the knee-joint, and a padded splint was applied to the back of the leg and thigh. No uneasiness or pain followed the operation, and the joint quickly regained its natural appearance; the pain vanished, and at the end of ten days he was able to walk about; but as a measure of precaution I still kept the joint supported by a starched bandage. This patient was seen by some American surgeons during their visit to the scientific Association, held here last August, as well as by some practitioners of this city.

The above makes the seventh case in which I have employed in chronic hydrarthrosis of the knee-joint, injections of iodine, and I have not, in a single instance, witnessed the least unpleasant result follow the practice, and in all, it has been eminently successful. Before concluding, I would direct attention to the following points:—

1st. The necessity of a careful diagnosis. It is in chronic hydrarthrosis alone that I recommend iodine injections.

2nd. Puncture the sac above the level of the patella and on the front of the femur, having first made the tumour tense by a bandage carried round its lower portion.

3rd. Inject two drachms of tincture of iodine with two drachms of luke-warm water.

4th. Having injected that amount of the fluid, manipulate the joint, so as to bring all its surface into contact with the fluid, which is then to be allowed to remain.

5th. Close the external wound and surround the joint with a wet bandage, which should be carried upwards from the ankle to above the knee.

6th. Keep the limb in a straight position on a padded splint.

7th. Do not allow any motion to take place for at least a week after the operation.

8th. When the patient is allowed to leave his bed, take off the wet bandage and surround the joint with a starched bandage.—*Communicated by the Author.*

49.—REMOVAL OF THE PATELLA FROM AN EXCISED KNEE-JOINT.

[In a case at King's College Hospital, where Mr. Fergusson excised the knee-joint

for long standing disease of the articulation, after a few weeks' excellent progress of the case, abscesses began to form in the soft tissues about the patella. Fifteen weeks after the first operation an incision was made at the side of the patella, and this bone being found by the finger to be ulcerated on its under surface, was removed, and the patient is now again in a fair way of making a perfect recovery with a useful limb.]

Mr. Fergusson made some very pertinent remarks upon the proceeding he had just put in practice. From what he had learned of the various steps of the operation of excision of the knee-joint, he was now an advocate for the removal of the patella, even when healthy, as it was liable to give subsequent annoyance. Mr. Jones, of Jersey, had in a most praiseworthy manner exerted his skill on many occasions to save the cap-bone with its ligament entire, and had frequently succeeded; but he (Mr. Fergusson) would for the future take away the bone, provided it was not bound to the condyles of the femur by osseous material. He had been the more induced to follow this proceeding of removing the patella, owing to the great benefit which resulted from the practice in one case which had been treated by his friend Mr. Price. In this instance the patella was similarly affected, and since its removal the patient had been freed from former annoyance. It was sometimes thought that although the ends of the bones remained united merely by soft material for some time, osseous consolidation would not ultimately follow. This was a very serious error to fall into; for an admirable illustration of patience and good management was evinced in the case of a patient now in the house, and who had come back to exhibit himself to Mr. Partridge, who performed the operation. In this instance the most pleasing result followed; for the man was now able to walk about without the assistance of stick or crutch, and to renew his ordinary occupations. Mr. Fergusson then alluded to the various notions that were entertained by some surgeons with regard to the "bringing about of anchylosis." For his own part he was ignorant of any plan whereby the surgeon could forward so desirable a proceeding; and he believed that the good result which sometimes followed in old-standing disease of the joints was entirely due to nature, and that far too frequently the surgeon had claimed an amount of ingenuity he did not possess.—*Lancet, Feb.* 27, 1858, *p.* 214.

50.—*The Important Point in the After-Management of Excisions of the Knee-Joint.*—We wish to draw especial attention, as we have indeed already repeatedly done, to the exceeding importance in the after-treatment of these resections, of keeping the limb in entire rest for a long period. As soon as all bleeding has ceased the limb should be dressed and carefully secured in a straight position on a back splint with movable sides. It may then be swung in the manner now so generally employed. Inp adding and fitting the back splint in the first instance, in securing also that there is no hurtful pressure on the heel or on either malleolus, the utmost care should be exercised, for this part of the apparatus ought not to be removed until consolidation has taken place. As the side splints are movable, no difficulty will be met with in dressing the wound, and the pads, &c., should be secured from soiling by oil-silk. Among the causes of failure after this operation, no single one can, we feel sure, claim so many limbs as the too early change of splints. The over anxiety of the operator in, it may be, his first case, to ascertain that all was doing well, to know whether consolidation had commenced, &c., has, in not a few instances, been the very means of defeating his wishes. It is not "meddlesome midwifery" only which is "bad." Repeatedly has it happened that all was doing excellently well, the limb perfectly straight, &c., up to, it may be, the sixth, tenth, or fourteenth day, the day of the first complete dressing; that then the bones got displaced, and could never after be restored to position. If an operator be conscious of any moral infirmity in this direction he ought at least to take the precaution of dividing the hamstring tendons, but even then his cases must not be expected to do as well as those of surgeons who have a large stock of patience.—*Med. Times and Gazette, Dec.* 12, 1857, *p.* 604.

51.—ON PIROGOFF'S AMPUTATION AT THE ANKLE-JOINT.

By T. S. Wells, Esq., Lecturer on Surgery at the Grosvenor-Place School of Medicine; Surgeon to the Samaritan Hospital, &c.

[This is a lecture delivered at the Grosvenor-Place School of Medicine. The diagram here shown is one from Pirogoff's own work. It will be known to most that Pirogoff was the chief surgeon to the Russian forces in Sebastopol during the siege.]

I will translate to you his own words, and having his drawings before us, we will follow carefully the various steps of the operation as he directs. He says:—

"I commence my incision close in front of the outer malleolus, carry it vertically downwards to the sole of the foot, then transversely across the sole, and lastly, obliquely upwards to the inner malleolus, when I terminate it a couple of lines anterior to the malleolus. Thus all the soft parts are divided at once quite down to the os calcis."

Here is the diagram. The inner extremity of this incision is carried obliquely forward some lines anterior to that on the outer side, in order not to cut through the posterior tibial artery until after its division into the plantar branches. Now let us make this first incision and proceed.

"I now connect the outer and inner extremity of this first incision by a second semilunar incision, the convexity of which looks forward, carried a few lines anterior to the tibio-tarsal articulation. I cut through all the soft parts at once down to the bones, and then proceed to open the joint from the front, cutting through the lateral ligaments, and thus exarticulate the head of the astragalus."

You see I have made this second incision, have opened the joint, and using only the point of the knife upon the strong ligaments which keep the astragalus in its place, have completed this part of the operation with the greatest facility. The joint is found very readily by fixing the malleoli, and alternately flexing and extending the foot. It is opened with the greatest ease by holding the foot strongly extended, and as the capsule is very broad, the joint opens at once. The internal lateral ligaments are easily divided. The only difficulty in disarticulating the astragalus is about the outer malleolus, but it is easily overcome by cutting closely with the point of the knife all round the malleolus, so as to divide the ligaments which pass from it. Keeping up the extension of the foot the head of the astragalus starts out, and then "it is only necessary to cut through the posterior wall of the capsule to expose the sustentaculum tali." Now for the third step.

"I now place a small narrow amputation saw obliquely upon the os calcis behind the astragalus, exactly upon the sustentaculum tali, and saw through the os calcis, so that the saw passes into the first incision through the soft parts."

Just look at the skeleton: see how the os calcis is grooved on its internal surface. Here about the middle of this surface is the process—sustentaculum tali—supporting the anterior part of the astragalus. I now follow Pirogoff's directions. The saw I use I should have called "Butcher's" a week ago, but it is one just sen t

me by Mr. Hilliard, an instrument maker of Glasgow, who says it was given many years ago to Dr. Laurie by Dr. Grahame. You may call it Grahame's saw, or Butcher's saw, which you please. It answers our present purpose admirably by either name, though not better than one of the narrow resection saws of Langenbeck you have seen me use so often.

Pirogoff says very truly,—"Saw very carefully, or the anterior surface of the tendo. Achillis, which is only covered by a layer of fat and a thin fibrous sheath, might be injured."

You see a very few strokes serve to cut through the os calcis, and a touch or two of the knife upon a few shreds left undivided in the sole close to the bone separates the foot. So far the proceeding is a very rapid one. I would be bound to do it easily without the least hurry within one minute.

This sawing the os calcis may be called the third step of the operation; now for the fourth. Lastly, says Pirogoff:—

"I separate the short anterior flap from the two malleoli, and saw through them at the same time close to their base."

Well, this is done without the least difficulty, and now you see the great difference between this operation and Syme's. I say nothing now of the much greater ease and rapidity with which it is done; but you see at a glance that the posterior flap is not a hollow, it forms nothing like a cap or bag, but it contains the posterior tuberosity of the os calcis with the insertion of the tendo Achillis.

"I turn this flap forwards, and bring the cut surface of the os calcis in apposition with the articular surface of the tibia. If the latter be diseased it is sometimes necessary also to saw off from it a thin slice with the malleoli."

Now let us see what advantage Pirogoff claims for his method. He says:—

"1. The tendo-Achillis is not divided, and so we avoid all the disadvantages connected with its injury.

"2. It also follows that the base of the posterior flap is thinner than its apex, while the skin on the base of the flap remains united with the fibrous sheath of the tendo-Achillis.

"3. The posterior flap is not cap-like, as in Syme's method, and its form is therefore less favourable to a collection of pus.

"4. The leg after my operation appears an inch and a half (sometimes even more) longer than in the three other operations (Syme, Baudens, Roux), because the remnant of the os calcis left in the flap, as it unites with the inferior extremities of the tibia and fibula, lengthens them by an inch and a half, and

"5. Serves the patient as the point of support."

But to return to the case before us, I will use three or four sutures to keep the flaps together, and now see how beautifully they fit. Look at the stump from the side. Look at it from behind. It is really admirable, and by bringing the feet together you may see that the difference in length of the two feet when the pelvis is placed square is not more than from an inch and a quarter to an inch and a half.

After operating on the living subject Pirogoff leaves the two angles of the wound quite open, to admit of free discharge.

In reply to the objection that the remnant of os calcis left in the flap might die, and act as a foreign body, he says the fear that this might prove to be the case prevented him from adopting the operation on the living subject long after trials on the dead had shown its advantages. He also feared that this remnant of os calcis, even if it did not die, would still not adhere to the surface of the

tibia, and consequently would become useless as a point of support. But after reflecting upon the facts, that the periosteum of the tuberosity of the os calcis is very closely united both with the skin and with the fibrous sheath of the tendo-Achillis, and is very plentifully supplied with vessels by the *rete calcanei*, he resolved to try the operation on the living, especially as cases occurred which taught him that in wounds of the head by sabre strokes, flaps containing considerable segments of the cranium re-united with the bone below, both by first and second intention. Up to April, 1853, he had performed the operation in three cases, ages being 12, 13, and 19. All these recovered well, and two of them walked well without stick or crutch, and without limping or tottering. These cases proved undeniably that the tuberosity of the os calcis left on the flap does unite with the tibia, and adds so much to the length of the stump that it nearly reaches the level of the sole on the sound side; secondly, that the tendo-Achillis is not stretched by the altered portion of the tuberosity; and, thirdly, that the progress and healing of the wound need no special attention not required after the other amputations at the ankle. Collections of pus in the sheaths of the divided tendons are observed after any of these amputations. Pirogoff proposes that graduated compresses should be used, and fixed with the immovable plaster of Paris bandage in the course of the tendons on either side of the leg. He believes also that the tendons should not be cut off too short, in other words, "not too near the spot where their synovial sheaths are cut through; their ends should rather project a little. If they are cut too short they conceal themselves in the fibrous canal, or, what is worse, when the limb is moved they slip upwards out of their sheaths." He adds:—"I fear nothing so much as this, namely, when the belly of the muscle contracts, and draws up the tendon divided, or half destroyed by suppuration, out of the sheath. I am convinced that the fixing of the tendons before and during the operation by methodical pressure, and the continuous maintenance of the limb in one and the same position by the plaster bandage, may contribute a great deal towards the successful result of these operations."

I will also read you his concluding observations, as they have a very important bearing upon the selection of cases for the operation. They are as follows:—

"It was also worthy of remark that in one of these cases, notwithstanding the suppuration and the considerable gravitation of pus into the flap (in the third case); notwithstanding the softness and fatty degeneration of the os calcis, which could be cut with the knife (in the second case); and, lastly, notwithstanding the bleeding fungous excrescences which formed on the bones (also in the second case), still the remnant of os calcis united firmly with the tibia and fibula. Lastly, one of the cases (the third) proves that the exarticulation at the ankle-joint after my method—at least in children and young people—may be undertaken even in cases of diseased ankle-joint, provided disorganisation has not extended too far over the soft parts about the articulation. In the boy in the second case, I found pus in the capsule during the operation, the cartilages softened and decayed, the ends of the bones also softened and in a state of fatty degeneration, yet the result of the operation was most successful."

Here I must stop. I can tell you nothing of the results of the operation in this country, but I can repeat that in some of the cases where it is said to have been performed, it most certainly was not done in the manner and with the precautions I have brought before you. Whether it has succeeded or not I cannot say, but I do say that in some cases it has not been fairly tested, and I think it is worthy of a full and fair trial. This is the reason why I have quoted so fully the precise words of the eminent surgeon whose name it bears.—*Med. Times and Gazette, March* 20, 1858, *p.* 288.

52.—REMARKS ON THE EXPERIENCE OF THE SURGEONS OF THE "DREADNOUGHT" AS TO PIROGOFF'S OPERATION AT THE ANKLE-JOINT.

By J. Croft, Esq., Assistant-Surgeon to the "Dreadnought."

[This operation, so far as tried, has here met with encouraging success. It has

been performed six times—four recoveries, two deaths, one from granular disease of the kidney, the other from secondary deposits of pus in various joints. In all the four successful cases there was suppuration along the tendons of the leg, but no exfoliation of bone. The posterior part of the os calcis was united firmly with the tibia, generally in about three weeks, but in one instance in twelve days.]

I may here remark, that although the os calcis may be diseased at and about its articulating surfaces in instances of scrofulous disease of the joints of the tarsus, it is rarely that the posterior part is rendered too unhealthy to be made use of in the formation of a stump.

The advantages of this operation over "Syme's" (the only operation with which it can be compared) are, that it may be performed more rapidly as to time, leaves a more vascular flap, forms a longer stump, and produces a firmer pad for the subject to walk upon.

Less time is occupied in the operation, for the somewhat troublesome dissection of the skin of the heel from the os calcis is avoided, and the os calcis sawn through instead.

Greater vascularity of the flap is secured, for the plantar arteries are divided in the hollow of the foot.

The length of the stump is a very important point; it is longer than that in Syme's operation, by the portion of the os calcis left on the flap, which should be quite an inch and a quarter. In the four instances mentioned, the difference in length between the foot operated upon, and the sound foot, was never more than three-eighths of an inch.

The mode of operation, as performed by Mr. Busk, Mr. Tudor, and myself, is to grasp the projecting portion of the foot with the left hand, then to enter the point of the knife *immediately* behind the malleolus, and make a semi-circular incision, in front of the point, terminating at a corresponding point behind the opposite malleolus; next, to carry the incision downwards and slightly forwards to the edge of the sole of the foot, straight across the sole, and terminate it at the opposite malleolus, or the point at which the incision was commenced.

Having disarticulated the foot, the soft parts are to be separated from around the os calcis in a line from the posterior margin of the upper articulating surface to the under edge of the articulating surface of the cuboid, and the mass in front of this line to be removed by the saw.

The ends of the tibia and fibula are sawn off in the usual way in Syme's operation. During the process of separating the soft, or rather the tough parts, about the os calcis, care should be taken to keep the edge of the knife close to the bone, in order to avoid wounding the posterior tibial or plantar arteries. The portion of the os calcis left on the flap should be placed in contact with the end of the tibia, and if the saw has been entered well behind the calcaneo-astragaloid articulation, and brought out at the under margin of the calcaneo-cuboid articulation, the contact will be accurate. If the bones cannot be placed in accurate contact, thin slices of bone from the upper and back part of the portion of the os calcis should be removed by the saw until they can be adapted. The saw we prefer is Bigg and Milliken's modification of Butcher's Dublin saw.—*Lancet*, *Feb.* 6, 1858, *p.* 136.

53.—*Excision of the Os Calcis by a New Method.* By JOHN ERICHSEN, Esq., Professor of Surgery at University College, and Surgeon to the Hospital.—Excision of the os calcis is usually practised by making an incision *across* the sole of the foot, from one malleolus to the other, turning back the heel flap thus formed, making another incision forwards over the calcaneo-cuboid articulation, and then dissecting out the bone. In such an operation as this, the sole is extensively incised, and there is the after-disadvantage of cicatrices being left along the line of most pressure. In order to obviate this, the operation was modified, as described in the following case, drawn up by my dresser, Mr. James. The modification consists in carrying a horse-shoe incision from a little in front of the calcaneo-cuboid articulation round behind the heel to a corresponding point on the opposite side of the foot. The semi-circular flap thus formed is dissected up by

fingers or hand, to encircle the parts with strips of adhesive plaster, frequently thus inducing inflammation, thecal abscess, and even the destruction of a finger.]

In all injuries complicated with wounds, my practical experience induces me to urge the adoption of a plan which I will now briefly describe.

After the thorough cleansing of the hand by soaking in warm water, narrow strips of lint or linen wetted in tepid water should be lightly and gently applied around the fingers which are injured, commencing from their ungual phalanges. In each case some slight modification may be required, and often an oblique or even a vertical adjustment of the lint may be useful. When a severe laceration of the back of the hand or palm is to be treated, pieces of lint with a slit in them may be advantageously employed. The finger passes through the aperture in the lint, and the strip then supports the flap of integument very firmly. The arm is to be supported and raised upon a pillow, and irrigation may be used temporarily or continuously. This is accomplished by arranging a vessel to hold water above the patient, and to this a tube of vulcanized India-rubber is affixed, the end of which terminates in a fan-shaped piece of zinc, the convex border of which is perforated with small holes, through which, by means of threads, the water percolates guttatim. A piece of vulcanized India-rubber cloth must be laid upon the bed as a conductor for the water as it drains off into some receptacle placed by the side of the patient.

The advantages of this plan seem to be—

1. A constant stream of water is flowing over the injured part, whereby an equable temperature is maintained.

2. When suppuration is established, the discharge, especially if sloughing takes place, is washed away, and the wound kept perfectly clean.

3. The cuticle is kept moist and yielding, a circumstance of no little importance in the treatment of injuries of the hand in the working classes, in whom this structure, often like a layer of horn, prevents the swelling resulting from inflammation, and causes intense pain, and therefore more constitutional disturbance.

4. It ensures the part being kept moist, which is not always the case when the patient is dependent upon another person to apply the water.

In illustration of the advantages of the treatment advocated, I adduce the following cases, which I will now briefly relate.

Case 1.—*Incised wound of the Index Finger, with division of its Metacarpal Bone.*—A boy, aged 8 years, whilst using a chaff-cutting knife, inflicted upon his right hand the following injury. A wound in the soft parts extended from the palmar surface of the index finger transversely across its radial border, over its dorsal surface, and terminated at the radial border of the extensor tendon of the middle finger. The head of the metacarpal bone was severed from its shaft, and the member hung down from the hand, being attached by the soft parts only on its palmar aspect. The knife had cut into the metacarpal bone of the middle finger also. My dresser, Mr. Penfold, at once determined to attempt the restoration of the finger, and adjusted the parts by means of strips of wet lint in an extended position. The arm and hand were elevated, and the parts were kept constantly wet. Suppuration occurred; but after a few days the wound granulated healthily, and in nine weeks the part was healed, and the boy enjoyed flexion and extension of the finger.

Case 2.—*Incised Wound of the Metacarpo-Phalangeal Articulations and soft parts on the Dorsal Surface of the Right Thumb and Index Finger.*—Dennis Haley, aged 20, was admitted into Guy's Hospital May 6th, 1853. He was a healthy, robust countryman from Bexley, and employed in a stable. With the knife of a chaff-cutting machine he had inflicted a severe wound transversely across the dorsal surface of the right thumb and index finger. The metacarpo-phalangeal articulations of both these members were laid open. The extensor tendons of the thumb were divided, but those of the index finger were not entirely divided. The thumb was partially dislocated forwards, by the action of the flexor muscles. The wound extended slightly round to the radical border of the thumb. The hand was well soaked in warm water; and afterwards, the

into apposition, narrow strips of lint, wetted in water, were gently applied around the injured members, beginning from their ungual ends until a complete splint was thus formed. The strips of lint were applied layer upon layer as high up as the wrist joint. The whole hand was then enveloped in wet lint, and supported on a pillow so that a constant stream of water might flow over it from the irrigator. Considerable hemorrhage occurred during the first twelve hours. For a few days afterwards active inflammation existed, which was controlled, however, and in eight days the edges of the wound showed healthy granulations. Irrigation was still continued for a few days longer, after which wet lint alone was applied. About the middle of June the wound was quite healed; and when he left the hospital he had a useful hand. He could flex and extend the index finger, and bring the thumb in contact with it firmly. The thumb was partially dislocated forwards, and did not allow of much movement.

Case 3.—*Lacerated Wound of the Joints between the First and Second Phalanges of the Index and Middle Fingers: Both saved.*—A boy, aged 16 years, was admitted in Guy's under my care in February, 1857. A severe injury had been inflicted on his right hand by a circular saw, just before admission. The little and ring fingers were merely hanging by strips of integument; and my dresser, Mr. Broad, removed these through the first phalanx. The joints between the first and second phalanges of the index finger and middle were cut open on their dorsal aspect; but as there was no further injury to them, Mr. Broad determined to attempt their reparation. In this he was successful; for, by enveloping the injured fingers in strips of wet lint, cicatrisation was effected in 34 days, and the boy enjoyed the movements of flexion and extension of the fingers.

As the value and usefulness of the hand depend in a great measure upon the integrity of the thumb, I may be excused if I devote a few moments to the consideration of the injuries of this important member in particular.

I believe it may be laid down as a rule that no portion of a phalanx or of the metacarpal bone should be removed by the surgeon, even should the bone project beyond the lacerated integuments, and appear to be so denuded, that to save it would be looked upon by the majority of observers as hopeless. This rule is based upon practical experience, and the results obtained in leaving cases of compound comminuted fracture to the reparative powers of nature. One case among several I will relate.

Case 4.—A young man was brought to the hospital, whose thumb was shattered by the explosion of a pistol. The ungual phalanx and about half of the first were carried away, together with the soft parts, as high as the ball of the thumb, and the integuments were hanging in shreds. The stump of the first phalanx projected considerably, and it did not seem possible that it could ever have been again covered by skin. I determined, however, to assist nature in saving all that remained; for, had the parts been neatly trimmed, and the bone covered with integuments, the stump of the first phalanx required to be removed at its articulation with the metacarpal bone. In this case the hand was well cleaned, and strips of lint applied from the carpus towards the ungual phalanx, so as to bring the lacerated integuments as much over the stump as possible. Superficial sloughing of the lacerated surface took place, granulations were soon developed, and about an eighth of an inch of the stump of the phalanx exfoliated. After this the wound healed rapidly, and the lad obtained a most useful hand, enjoying all the movements of the second phalanx. He came under my observation a few years after this accident, and I was gratified in feeling the power he enjoyed in grasping my hand between the stump of his thumb and fingers. He was then pursuing the employment of an engineer, an occupation requiring considerable manipular dexterity.

I trust my hearers will excuse the detail of this case, hoping that its result may deter the younger members of the profession from an officious interference with the reparative powers of the animal economy. No case, at first sight, presented more discouraging prospects; yet I never had one attended with more satisfactory results.

In severe laceration of the soft parts of the fingers and hands, I believe we are not justified in pursuing any other treatment than an attempt to save the parts. However ragged and lacerated the integuments, it is surprising how nature restores

caused by some old stairs giving way with him. The fracture was put up immediately on admission in plaster of Paris. He was able, two days after, to move about the wards, complained of no pain or inconvenience, and was discharged on October 31st. About a month after his discharge the bandage was removed, and the fracture found to be completely united.

Case 5.—Fracture of the Fibula.—John L——, aged 34, was admitted under Mr. Fergusson, on February 2nd, with fracture of left fibula, about the middle of the lower third. The accident was caused by his slipping off the curb-stone. On admission there was no swelling and very little displacement. The limb was immediately placed in a plaster of Paris bandage. On the next day he was enabled to walk about the ward with a crutch, and complained of no pain. On February 13th he was discharged. On February 20th he presented himself at the hospital, having come some distance with the aid of his crutch. The bandage was entire, and the patient had suffered no pain.

Case 6.—Fracture of the Humerus.—Mary S——, aged 42, was admitted February 5th, 1858, under Mr. Bowman, with a fracture of the left humerus, at the juncture of the middle and lower third. The accident was caused by her being knocked down by a cab. There was no swelling about the parts. The arm was bandaged from the hand to the elbow. The limb was then semiflexed, and a plaster of Paris bandage was applied, extending from just below the elbow to the axilla. The arm was retained in position with a bandage until the plaster set. She experienced no pain, and the arm appeared in good position. On the 10th she was made an out-patient. She has since presented herself on two or three occasions. The bandage remains intact, and she complains of no pain.

These cases have been selected out of a great number that have occurred in the hospital, as illustrative of the use of plaster of Paris in fractures. Fractures of the fibula seem to be those in which its use is most frequent; but as the above cases show, any simple fracture where there is not much displacement, may be treated in a similar manner.—*Brit. Med. Journal, Feb.* 27, 1858, *p.* 161.

57.—CASES OF NECROSIS OF THE BONES OF THE FOREARM.

September 29th. Thomas K——, a boy aged 9 years, admitted to the Great Northern Hospital under the care of Mr. Savory, with necrosis of the right radius. There are four fistulous openings leading to the radius, which can be distinctly felt bare. The highest aperture is near the upper extremity of the bone, and the two lower (one of which is in front) are near the wrist. No loose fragments of bone can be detected. The elbow and wrist joints move freely. The boy states that nine months ago he first perceived pain of a slightly intermitting character, but always aggravated at night, over the styloid process of the radius. Shortly afterwards abscesses formed in the wrist, and on the front of the fore-arm, just below the bend of the elbow. He was under treatment in the country, but the arm grew worse. At the beginning of August last he became a patient at the Royal General Dispensary under Mr. Savory, who watched the case and finally admitted him here for operation.

Considering the present condition of the limb, and the history and duration of the disease, there can be little doubt that a considerable portion of the radius is necrosed; and as the state of the boy's health appears to demand some interference, Mr. Savory proposes to remove the dead bone.

October 2nd. Chloroform having been given, Mr. Savory made an incision along the back of the forearm, over the middle two-thirds of the radius, and through the sinuses; the bone was at once exposed, and the whole shaft was found to be free from periosteum, and dead; it was divided in the centre, and each half drawn out with the greatest facility; the articular extremities remained untouched, and the wrists and elbow joints therefore uninjured, and their movements unimpaired. The shaft had in all probability separated at the epiphyses, from the extremity of each of which new bone had been thrown out, so as to encase the ends of the necrosed shaft for an inch or more. There was scarcely any hemorrhage,

and the wound was closed by sutures and strapping. The fore-arm, supported by a bandage, was placed in a prone position, on a straight splint.

3rd. Had a good night, and the arm comfortable. Ordinary diet.

℞. Acid. nitr. dil. ℥ vij; cinchon. decoct. ℥j ter die.

4th. Slept very well. The wound dressed; the greater part has healed very perfectly by adhesion, and the remainder is granulating.

9th. The wrist evincing a tendency to twist outwards, this was counteracted by placing a small splint on the radial side of the fore-arm, resting at each extremity, respectively on the outer condyle of the humerus, and the styloid process of the radius, and therefore having an axis as nearly as possible identical with that of the removed shaft. The wound is nearly all closed, and the boy, in a much better state of health than on admission, left the Hospital.

The great object of future treatment, of course, will be to maintain the limb in a proper position, until a new shaft is provided.

We have given the above report exactly as sent to us. The case is of much interest, not so much in respect to the extent of the necrosis, since many similar ones have occurred, as on account of the prognosis. Will the shaft be restored? To return a satisfactory answer to this question, we must consider the pathology of the case; and, secondly, the actual results of experience. With regard to its pathology, it is well known that the necroses of young children are far more liable to be attended with deficient repair than those of adults. In them the periostitis is peracute, and the periosteum is often stripped off very quickly and over a very large surface. This form is well illustrated by a specimen obtained by the writer some time ago, and now in the museum of St. Bartholomew's, in which the entire clavicle of a child was as perfectly and clearly denuded of periosteum as if it had been soaked for a preparation. The bone was surrounded by a bag of pus, and stripped-off membrane had carried with it no osseous spiculæ whatever. The disease had only occupied a few days, and had followed a blow. Had the patient lived, there would probably have been little hope of the production of a substitute shaft. We suspect that the bone-producing power of periosteum alone has been much overrated. In all the forms of necrosis in which good substitute shafts are formed the disease has usually been but sub-acute, and has not only detached the investing membrane slowly, but has separated with it numerous spiculæ of bone. Excepting in young children, peracute simple periostitis is seldom seen. But any arguments drawn merely from pathological inference will be much less conclusive than those furnished by actual facts. As stated above, our own experience has been, that in young children the surgeon's hopes of good reproduction of bone are not unfrequently doomed to be disappointed. The following case furnishes such an important fact in evidence, that we must cite it.

[The subjoined case and remarks were written out for the Hospital Reports of the 'Medical Times and Gazette' about two years ago, but were not published.]

"There is a case now under the care of Mr. Cock in Lazarus Ward, Guy's Hospital, which is well worthy the inspection of any who take an interest in what is called Conservative Surgery. It is that of a young man, the whole shaft of whose right ulna was removed in early life, and has never been in any degree reproduced, but who yet enjoys excellent use of the extremity. It exhibits in a most striking manner the great powers which nature will exert in accommodating parts to conditions most different to those originally intended. And here it may be remarked, that it is a subject of great regret and of much loss to surgical knowledge, that cases in which operations of what are termed the conservative class have been performed, are not watched over a longer series of years than is generally the case. There can be no doubt but that, if certain cases in which operations are performed, apparently without much of hope, were always seen again after a few years had elapsed, the results obtained would often be found to far surpass the best that had been expected. The processes of nature in completing the re-adaptation of parts to their altered relations require time, but if due time be allowed the evidences of adaptive effort manifested are often surprisingly great. One might have supposed that a very useless sort of a member—an encumbrance rather than a help—would have resulted from the removal of the whole ulna, and the dislocation of the upper end of the radius; that such, however, is not necessarily the case let the following narrative testify:

"Samuel Daley, now aged 18, a healthy looking lad, is now under Mr. Cock's care, on account of an affection not in any way connected with that which forms the main interest in this case. His right arm presents the following conditions: There extends along the inner border of the fore-arm, almost from the wrist to the elbow, a linear cicatrix, beneath which the parts are somewhat fallen in, and the border, instead of being round and full, is concave. The styloid process of the ulna, and its whole lower articular head, may be felt in its place, but between this and the olecranon the bone is entirely deficient. The cicatrix marks no doubt the incisions by which the shaft was removed; and there would appear to have never since been the slightest attempt at reparation. The extremities of both articular ends are irregular, and much in the condition left at the time of separation. The olecranon is about an inch long, the shaft being abruptly deficient, with the exception that a very slender spicula, about two inches long, extends forwards, from its inner border. The lower head of the bone is about half an inch long, and ends abruptly. The radius is dislocated forward, over the inner condyle of the humerus, and has there very free motion, being restrained only by membranous bands. The arm is thin, and the state of its bones in the respects adverted to are very easily made out. The lad states that he is right handed, and always uses the affected arm. He is accustomed to wheel a barrow, to lift heavy weights, and accomplish all other necessary achievements with it. Its defect appears to be of remarkably little inconvenience to him. As to the history of the original disease, it appears that he was treated in St. George's Hospital, at the age of four, for necrosis of the bone, and that four operations for the removal of sequestra were performed."

Here then is a case of necrosis in a young child, in which not the least attempt at a re-production of bone took place. We may suitably append to it the particulars of the following one, which came under our notice in 1851. It is further interesting as being an exact parallel to Mr. Savory's, inasmuch as the same bone was affected:—Mary Ann H., aged 10, was admitted with necrosis of the right radius, and numerous sinuses. The attack was said to have begun without any injury, and was attended by extreme pain. She was admitted at one of the large Hospitals, and such was the degree of constitutional disturbance, that amputation was decided upon and the day fixed, when her friends refused to consent, and removed her. The sequestrum was extracted early in October, by a long incision in front of the arm; it comprised the entire shaft, the epiphyses excepted. This was about three months after the original inflammation, yet there was no formation of new bone. The writer has no note of the case later than December 10. At that time the incision had soundly healed, and all that could be felt in the line where the radius should be was a band of induration perfectly flexible, and which yielded on the slightest motion of the wrist. The girl appeared to be in excellent health, so that there was no reason, other than the essential nature of the disease, why the formation of a new shaft should not have commenced.

The case occurred at the Hospital for Skin Diseases, where the girl was under care for a cutaneous affection, when cured of which she unfortunately ceased to attend.—*Med. Times and Gazette, Oct.* 31, 1857, *p.* 453.

58.—ON LATERAL CURVATURE OF THE SPINE.

By Holmes Coote, Esq., Assistant-Surgeon to St. Bartholomew's Hospital, and to the Royal Orthopœdic Hospital, &c.

The body of a newly-born infant was brought to me by Mr. Dunn for examination, as presenting a singular combination of abnormities. There were noticed:—

1. Deficiency of cranial bones posteriorly, and the presence of a large bag containing fluid communicating with the interior of the skull.
2. Hare-lip.
3. Fissured palate.

4. Congenital deficiency of the abdominal parietes, so that they burst during birth.

5. Talipes varus of both feet.

6. Double lateral curvature of the spine.

From numbers 1 to 4, we have illustrations of arrest of development. The fœtal layers, which curve forward to complete the cavities of the body by uniting in the mesial line, had here performed their work ineffectually; development had been arrested while there were two separated halves of the body. Hence the open fontanelles; the hare-lip; the fissured palate; the thinned abdominal walls. We see the same in the fissured sternum; in epi- and hypo-spadias; and in the permanent and normal opening of the nares, mouth, vagina, urethra, or anus.

In 5 and 6, we have instances of intra-uterine deformities, caused by long-continued pressure of the uterine parietes upon the growing fœtus. The inward-turned feet cannot execute those movements, by which the first approach to the normal condition is attained. The muscles, ready formed to contract, are impeded; and the club-foot becomes permanent. The elongating spine has no space for its increasing growth. It becomes compressed, and curves laterally; *i.e.*, in that direction where it meets with least resistance. If the compression be slight, the curve is single, and extends in one sweep from the upper dorsal region to the pelvis. If it be severe, the curve is double, convex in one direction, and concave in another.

Do these deformities, depending upon compression, ensue from accidental deficiency of the liquor amnii, or from natural defect in the uterus, by which its power of expansion is limited? I should be inclined to doubt whether accident ever produced intra-uterine errors. But yet others of great experience have stated that congenital deformities may occur in one child only of a family; the others being perfectly well formed. I confess at present I have no data sufficient to answer the question.

In this communication, I wish to confine my remark to "lateral curvature." The fœtus was carefully dissected, in order that we might see why it was that the spine was twisted.

First, the vertebræ and the muscles which acted upon them, presented no abnormity. The erectores spinæ, those assemblages of muscles which lie on each side of the spinous processes, were complete in every part, and equally developed, whether on the convexity or on the concavity of the vertebral column. They were formed ready to execute their allotted function; but it was obvious that the deviations of the spine from the straight line had so displaced their insertions, as entirely to alter their sphere of action. The action of the sacrolumbalis and the longissimus dorsi on the side of the concavity would have been, if any, to increase the curve. The same muscles spread over the convexity would twist or rotate some vertebræ, but in greater part would wither or become atrophied. I particularly desired to witness the effect upon the curve of the consecutive detachment of each muscular slip from its insertion, and accordingly cut through the tendons of both the principal muscles (namely, sacro-lumbalis and longissimus dorsi) first on the right and then on the left side, pressing and examining the curve at each instant, in order that I might detect the moment when resistance of any sort or kind was overcome. No effect ensued. The curve was as resistant as ever.

It may be as well to remark that owing to a stupid error, long since corrected by Professor Owen and others, who have followed in the course of homological anatomy, but hitherto continued in the schools, the anatomy of the muscles of the back is inaccurate, and rendered so incomprehensible, that it is quite the fashion to profess ignorance of the subject. These muscles, however, are simple to a degree, and extend from homologous points of bone from the pelvis to the head. In the same manner as the interspinales reach from spine to spine, so do muscular and tendinous slips composing the longissimus dorsi pass from diapophysis to diapophysis (*i.e.*, the tubercle of the lumbar region; the transverse process of the dorsal; and a rough spot near the articulating surfaces in the cervical region), and those of the sacrolumbalis from one rib to another.

We may conclude, therefore, that these muscles, the great extensors of the spine, have nothing to do with the production of lateral curvature; when the spine bends, they lose their proper relations, and cannot execute their functions.

In old standing cases, which I have examined in the dissecting-rooms, I have found the muscles on the convexity elongated, attenuated, and wasted; those on the concavity wasted also, but tense from secondary or *adaptive* contractions. But cut them through in every way, and the skoliosis, or lateral curvature, remains unaltered. No wonder that surgeons, who have been taught to believe in the "cure of a crooked back by the healthy exercise of its muscles," should be doomed to disappointment: that the practice of putting weights on the head of one, whose spine is already too weak to support the natural burden, should aggravate instead of alleviate the evil. "When I first became engaged," observed Sir Benjamin Brodie, in a lecture delivered at St. George's Hospital, 1846, "in a considerable private practice, and cases of curvature of the spine were presented to my observation, I was in doubt as to their nature and treatment; in this respect my education had been imperfect, and I had learned nothing of them from my teachers."

What is it, then, which holds the spinal column thus curved if the bones are primarily unaltered in shape, and the muscles are not concerned in the deformity? Unquestionably the spine yields to the superincumbent weight through weakness of the ligaments; these structures yield and contract, as we know ligamentous structures can contract, along the concavity. It is not one but every ligament which contributes to this end; those between the transverse processes; the fibrous capsules of the articulating processes; the corresponding part of the anterior and posterior common ligaments; moreover, there exists a general adaptation of surrounding parts. The yielding of these ligaments, easy and comparatively painless in a growing girl, is attended with extreme suffering in the adult, as was shown in the case of the late Gideon Mantell, the *post-mortem* examination of whose body has been most accurately given in the thirty-seventh volume of the "Transactions of the Royal Medical and Chirurgical Society," by my colleague, Mr. Adams.

To effect a cure, the spine must be slowly pressed into its proper shape, and there held by means of instruments until the same adaptive process of contraction, which ensued in the deformity, re-establishes the figure.

These remarks naturally point to some important conclusions in the matter of treatment.

First, any system based upon the development of muscular agencies is fundamentally wrong. When the spine is straight, and not before, can good result from the action of the extensor muscles.

Secondly, although it be true that in some early cases the deformity is very greatly lessened by the patient assuming the recumbent posture, yet experience teaches us, that want of exercise is followed by loss of tone, and impairment of general health, under which circumstances the spine is little calculated to retain its normal form when the patient resumes the upright posture.

Thirdly, mechanical support must be constant and sufficiently firm to act upon the vertebral column; hence instruments must be strongly made. Mr. Tamplin has shown that those of slighter make *bend back on* themselves, instead of acting upon the curvature; they yield to the vertebral column instead of commanding it. The nature and peculiar construction of the instruments now in use can be best illustrated by particular cases.

If the treatment of lateral curvature be involved, according to some authors, in mystery, the fault lies with those who set aside in this special subject the general principles of surgery. "The disease," says a modern author, "consists simply in a relaxation of the muscles and ligaments of the spine, in consequence of which the vertebral column being no longer able to support the weight of the head, neck, and shoulders, becomes curved to one side." The condition of the vertebral column is, therefore, analogous to that of the bones of the leg in knock-knee (*genu valgum*).

Suppose a surgeon were consulted by a young person suffering from knock-knee and flat-foot, would he recommend his patient to strap a knapsack on his back and take a walking tour through a hilly country? Assuredly not; he would advise rest; he would apply splints outside the leg, and supports to restore the lost arch of the foot.

But let the patient be a young girl with a curvature of the spine, and in a

moment the current of the surgeon's thoughts is changed. He recommends tonic medicines, frictions of the muscles of the back, the use of dumb-bells, calisthenic exercises, weights on the top of the head! By these means he assures his patient, whom he knows to be suffering from weakness of ligaments, that the muscles of the back may be strengthened, and that the increase of the deformity may be prevented.

I repeat that the muscles have no share in originating the deformity. But when the spine is curved, the muscles in the concavity contract like the string to a bow, and if they could act, they would increase the deformity.

I will next direct attention to the following point. The deformity, once established, increases at different rates of progress, if unchecked, through life. There is no age at which sufficient consolidation of the bones and ligaments occurs to secure the patient from increase of the evil.

Case 1.—Rosa S., aged 11, residing near Cambridge, became the subject of a very slight lateral curvature during the year 1857. I saw her November 18th, 1857, in conjunction with a professional friend, and it was arranged, not without misgiving on my part, that in consequence of the small amount of deviation from the straight line, she should only have that support which would be afforded by a pelvic band and two crutches to extend to the axillæ. Proper directions were given that the patient, a fine tall girl, should take a sufficient amount of rest. I heard from the mother, on several occasions, that there was no marked improvement: then came intimation that the curvature was increasing, and I accordingly arranged to see the child, February 24th, in London. There was a well-marked curve to the right, including the whole of the dorsal vertebræ; the lumbar vertebræ were upright, but it was easy to see that in a short time a compensating inferior curve would form. The health was good, except that there was a general weakness after exercise, and the patient disliked the deformity especially as affecting the shoulder and hip. I directed a pad to be applied by means of a steel bar, worked with screws and pressing on the convexity of the curve, as usually done at the Orthopœdic Hospital. A steel crutch extended along the left side of the body to the corresponding axilla. Sufficient time has not elapsed for me to pronounce that the patient is cured. But she is about to return to the country in comparative comfort: the deformity will not increase, and she will be enabled to take exercise suited to her age in safety. In the course of a few months she may be able to wear properly constructed stays.

Case 2.—A young girl, aged 18, named Sarah P., apprenticed to a draper, applied to me at the Royal Orthopœdic Hospital, January, 1858, in consequence of lateral curvature of the spine of two years' duration. She had consulted many surgeons in the county whence she came, and had been dissuaded from wearing instrumental support. The curvature increased. She experienced general pain over the back, extending to both shoulders, especially the right; pain extended round the ribs, along the course of the intercostal nerves, producing "stitch in the side;" there was frequent palpitation of the heart and faintness towards night time. For the last six months menstruation had ceased. Upon examination I detected a single long curvature, including all the dorsal and the upper lumbar vertebræ, the convexity directed to the right. January 18th, 1858, I directed the application of the instrument usually employed, with a single pad.

February 14th. She appeared to be greatly relieved of all the pains which had been fixed in the back; she had gained a quarter of an inch in length.

February 21st. Menstruation has returned; her general health is much improved; she considers herself fit to return to her home, above one hundred miles from London, promising to present herself in the course of a few months.

Case 3.—Maria M., aged 16, has been the subject of lateral curvature for three years; she suffers from great weakness and pain in the side; her occupation is that of dress-making, and she sits thirteen hours a-day. Upon examination there was detected a double lateral curvature, namely, a short curve to the right in the upper dorsal region, and a long curve to the left extending from the dorsal to the lumbar vertebræ. January 18th, 1858. An instrument with a double pad, was applied.

February 28th. The case under treatment. The pain and sense of weakness is greatly relieved.

Case 4.—Harriet B., aged 26, domestic servant, occasionally has carried a child; has suffered from lateral curvature for the last three years It has of late so much increased as to prevent her following her occupation. The symptom of which she complained most was pain under the inferior angle of the right scapula. Upon examination it was found that she had a single curve to the right.

February 18th. An instrument as usually constructed, with a single pad, was directed to be worn.

February 24th. The pain has subsided. The spinal curvature is becoming straight.

A young woman has been under my care, since October last, with double lateral curvature. An instrument has been applied, and she has gained at the present time one inch and three-quarters in height. I have given directions that she should return to the country, and see me again in a couple of months, when I hope to be able to apply with success support of a simpler character.

Mr. Tamplin has at the present time a case under his care, in which the patient is above thirty years of age, and he has had others much older. I have related in a preceding number the particulars of a case, aged thirty-three.

There are many who, on the perusal of these cases, will exclaim,—"We acknowledge the disease is progressive, but you, by your instrumental support, may afford, it is true, temporary relief, yet when that support is removed, the disease will be worse than ever. You weaken instead of strengthening the vertebral column." I deny the accuracy of this reasoning in my own name and that of my colleagues at the Orthopœdic Hospital. It is opposed to our daily experience. The relief afforded by instrumental support is *not* temporary; and as a witness, to whose unwearied industry no professional man can refuse a just tribute, I quote a case related by Mr. Stanley.

"Weakness of constitution, whether connected with rickets or not, is, in most cases, the source to which we look for explanation of distortion of the spine. Such an exception to the general rule did occur in the following case:—In a female, sixteen years of age, of feeble health and slim person, a single lateral curve of considerable depth, with its convexity to the right, and including the whole length of the spine, had formed in the course of a few weeks. That the yielding of the spine was owing to the weakness of the structures, which should firmly bind together its component pieces, was evident by the effect of such moderate extension of the column as could be made by gently elevating the head and shoulders, for then the curvature wholly disappeared. An apparatus was applied for the object of keeping the vertebræ in their proper place; and when this had been continuously worn for nine months, it was removed without the recurrence of the distortion; and, besides, it was ascertained that the stature of the body now exceeded by two inches that which it was ascertained to be at the time of the first application of the apparatus." ('Stanley, On Disease of the Bones', p. 221.)

This case forms no exception to the general rule. It is an illustration, confirmed by high surgical authority, of the value of instrumental support and mechanical treatment in deformities of the spine. Can we, I ask, ignore such evidence, in justice to the profession we are called upon to practise?—*Brit. Med. Journal, Feb.* 27, *and March* 6, 1858, *pp.* 164, 187.

59.—ON UNNECESSARY ORTHOPŒDIC OPERATIONS.

By Dr. W. J. Little, Founder of the Royal Orthopœdic Hospital, &c.

[It has been previously shown by the author that the slighter forms of congenital infantine varus, and relapsed cases of the same, might be treated without tenotomy, (see last volume.)]

I shall endeavour to demonstrate that a still larger proportion of those contractions which take place subsequently to birth may be so treated, at least as successfully without division of tendons as with the performance of that operation. In order not to appear to disparage Stromeyer's great discovery of subcutaneous division of tendons, and to prevent misconstruction, I may at once state that many cases of non-congenital deformities in various parts of the body are, in their advanced stages, relievable only with the aid of subcutaneous tenotomy. Talipes

equinus, wry-neck, contracted elbow and knee, when severe, and of several years' duration, may be here adduced; but it is matter of weekly experience to me how singularly the necessity for resort to the tenotome becomes restricted, when mechanical treatment by means of properly adapted and adjusted apparatus, and manipulations aided by physiological treatment, are resorted to. Having been in the first instance exclusively instrumental in removing the treatment of deformities, as a rule, from the hands of instrument makers to those of the members of the medical profession at large, with great advantage to the public, it will not be imagined that, by restricting the performance of surgical operation to fewer cases than it has of late years been applied to, I propose again to delegate the treatment of deformities to the instrument maker. On the contrary, I am fully persuaded that the proper contrivance, selection, and even the application of mechanical instruments, can only be judiciously effected by the medical man properly versed in anatomy and pathology, or under his immediate supervision.

The reader is aware that, in early life, from certain not very clearly defined forms of disease in parts of the cerebro-spinal system, one set of muscles in a member may lose the power of contracting, become relaxed or paralysed, whilst the antagonist muscles more or less speedily manifest a disposition to contract; or that the muscles on both sides of a member (flexors and extensors) without any distinct paralysis, lose something of their power of acting under volition; a state of half-paralysis and half-spasm occurs, to which the late Marshall Hall first, I believe, applied the term spasmo-paralysis, the consequence of which is, that the stronger set of muscles, commonly the flexors, acquire a preponderance, and contract the limb in the direction of their action.

To these causes—partial paralysis and spasmo-paralysis—the majority of contractions of infancy and childhood owe their origin. If the tendency to contraction be borne in mind by the medical attendant, its prevention may be effected, or if contraction be discovered when nascent, its further progress may be interrupted by suitable treatment—viz., attention to nutrition and the general health, especially to the condition of the alimentary and nervous systems, by local remedies, such as adequate covering of the part, in order to maintain, if possible, a proper temperature, particularly during winter—by periodical manipulations, so as to ensure the part being put thoroughly through all its natural movements daily once or oftener, and by studied use of the member, so as to favour relaxation or elongation of contracted parts, and the acquisition of strength in those which are weakened. By the use of these means, the greater number of paralytic or spastic contractures acquired during childhood and adolescence may be obviated or arrested, the exceptions being cases in which a more than usually severe paralysis, or an active tonic spasm affects some or all of the principal muscles. In the latter class of cases, the contraction rapidly attains its full development.

So long as the medical practitioner has simply to do with paralysis or spasm, and an amount of contraction susceptible of yielding to the pressure of the hand, or even to the moderate use of some mechanical contrivance calculated to maintain the member in a proper position, the rational surgeon will not affirmatively entertain the question of division of tendons, for division of muscles affected with paralysis or spasm is no cure for these diseased states.

In many instances, the contracted muscle is a healthy muscle, shortened merely from want of antagonists, and it is inconsistent with sound therapeutics to endeavour to reduce by tenotomy a healthy muscle to the condition of a paralysed one. Moreover, the apparent benefit derived from division of the tendon of a muscle, itself healthy, but possessing an inconvenient (?) activity, is only temporary, for after a few months' time the muscle re-contracts, unless the practitioner have determined to prevent the healthy muscle recovering tone after its division by sedulously keeping the ends of the divided tendon as far as possible asunder, an effort often frustrated by nature causing slow contraction in the newly-interposed or uniting medium. In such cases, instead of operation by tenotomy, we are bound to exhaust all legitimate modes of treating the paralysis, remembering that during childhood and adolescence there is ever hope of at least partial recovery from the paralysis. When the paralysis may be justly termed incurable, mechanical support by means of elastic substances, steel springs or caoutchouc, may aid the weak member to perform its office.

The objections made in a former paper (p. 35 of the present volume) to unnecessary tenotomy in slight congenital deformities apply to unnecessary division of tendons in contractures arising from paralysis, spasmo-paralysis, and spasm. It may here be observed of such cases, that when the operation has been prematurely and unnecessarily performed the *propter hoc* has been mistaken for the *post hoc*. It has often happened that while the patient has been under treatment by tenotomy and subsequent mechanical treatment, during a period of ten or twelve weeks or months, that the paralysis of the non-divided muscles has partially or wholly disappeared, justifying the opinion, that the same period occupied by proper treatment, without preliminary tenotomy, would have equally witnessed cessation of paralysis and consequent cessation of contracture and deformity, by restoration of antagonistic and associated action of the respective muscles of the part. That this result would have ensued is not merely an opinion, but matter of observation in similar cases treated without tenotomy.

Until the age of ten years, varying according to constitution and growth, the majority of paralytic and spasmic contractures may be subdued by mechanical and physiological means; and as after preliminary tenotomy the same mechanical and physiological treatment is for an equally protracted period desirable —*i. e.*, until recovery from the paralysis or spasm takes place—unnecessary tenotomy has not really the merit of saving time, for although at first a rapid alteration of the form or mobility of the affected articulation is produced, which operates favourably upon the minds of the bystanders, it is often a delusive benefit, often acting injuriously by detracting attention from the remaining modes of treatment.

Division of tendons in paralytic and spasmo-paralytic contractures is indispensable when the contracted muscles have undergone *structural* shortening, a state in which, besides constant contraction of collective muscular fibres, whether resulting from loss of antagonists or spasm, the individual muscular fibres, after the lapse of several years, probably not less than six or seven, more rapidly during childhood than after puberty, have undergone an interstitial change, the nature of which is imperfectly known, apparently consisting of adhesion amongst themselves, degeneration, atrophy, adipose transformations, which renders the aggregate muscle incapable of elongation by ordinary moderate mechanical extension. This state of structural shortening of muscle may be known by long duration of the contraction, by the sensation of rigid, inelastic, cord-like resistance offered to the hand of the examiner, and by the shrunken, wasted condition of the muscle, volition not necessarily being entirely absent in it.

Those who are familiar with the physical condition of the parts concerned in deformities, have no difficulty in recognising when structural shortening of muscles does or does not exist. I would suggest to those who are not adepts, that if after employing as tests the signs of structural shortening which I have enumerated, they will remain in doubt whether this condition is present; they may, in those cases in which no objection to anæsthetic agents exists, subject the patient to the influence of ether or chloroform inhalation. During insensibility a contracted joint becomes readily flexible, so long as structural shortening does not exist. If the muscular fibres have undergone interstitial degeneration and shortening, the joint will not be bent or extended, as the case may be, without violence and laceration of fibres.

The advantage of division of tendons in such cases—structural shortening of muscles and consequent limitation of movement and function of articulations and deformity—cannot be exaggerated. These are the cases in which the greatest permanent benefit accrues to the patient and to the reputation of the surgeon. The previously contrated, *structurally shortened* muscles, evince comparatively little tendency to re-contraction after operation.

On the contrary, especially during childhood, when the contracted articulation can be moved through a considerable portion of the natural range of movement, when the resistance is elastic instead of being rigid and unyielding, when in the foot, for example, the patient, by throwing the weight of the trunk upon the member, as in the act of lounging in fencing, can bring the knee over the point of the foot (toes), when the atrophy of the member does not amount to, or approach to, a loss of one-sixth (it is often as great as one-fourth) in its circumference, tenotomy is not required.

The means by which, in such cases, tenotomy is superseded, are those already recommended—diligent, pains-taking manipulations, appropriate mechanical supports, and appropriate exercise.—*Lancet, Nov.* 28, 1857, *p.* 539.

60.—ON LUXATION OF THE INFERIOR MAXILLA.

By Dr. E. Whittle, Senior Surgeon to the South Dispensary, Liverpool.

[The simple mode of reducing this dislocation recommended by Nélaton, seems to be not generally known in this country. It is infinitely preferable to the old plan on account of the facility and rapidity in executing it.]

As to the *modus operandi*, the patient is seated, and directed to open the mouth widely; the operator then rests the index and middle fingers of each hand upon the mastoid process on either side, and presses the thumbs against the prominence formed on either cheek by the point of the coronoid process; then a very moderate degree of pressure being applied, the condyles slip back into the glenoid cavities. If we proceed to analyse the steps of this method, as compared with the one generally adopted, we shall find a vast difference in the way the muscles are dealt with.

With regard to the position of the condyle: by pressing the molar teeth downwards and backwards, the chin is brought upwards, the prominent edge of the posterior surface of the condyle is pressed directly against the transverse root of the zygoma, and has, in fact, to be forcibly pushed round the obstruction, against the full antagonism of all the muscles attached to the condyles and coronoid processes, viz., the temporal and masseter, both powerful muscles, and the two pterygoids. On the other hand, by depressing the chin, as Nélaton recommends, the condyles are brought slightly forward, and present not an abrupt but sloping surface posteriorly to the transverse root of the zygoma; thus, by the first step in the operation, viz., opening the mouth, the resistance to be overcome is materially lessened. We have yet to consider the condition of the muscles. While the condyles lie in their abnormal position, the muscles attached to the condyles and coronoid processes are all in a state of relaxation (because the points of insertion are approached to the points of origin), except the posterior fibres of the temporal and masseter; these latter, and indeed the whole of the deep layer of the masseter, materially help the reduction, while the remaining fibres of the temporal, the superficial layer of the masseter, and both pterygoids are quite neutralised, the motion given to the head of the bone backwards, does not act in opposition to their line of traction on the bone, but at right angles to it. The temporal and superficial fibres of the masseter draw the bone upwards and a little forwards; now the manœuvre of reduction merely pushes the line of traction of these two muscles two or three degrees backwards, to that extent altering only the direction of their force, and not pushing directly against it. The line of traction of the pterygoids is almost directly inwards, and the reduction of the bone would in their case merely direct the line of traction two or three degrees backwards.

Contrast this state of the muscles with the violent resistance we have to encounter when we provoke the energetic action of the powerful masseter muscles, and the temporal muscles on either side; the whole united force of which muscles we have to overcome by pressing the thumbs against the molar teeth, a proceeding which, in muscular men, is only accomplished sometimes with great difficulty and after repeated efforts. The only objection I have heard made to Nélaton's plan is, that the cheeks may be injured by pressing them against the sharp point of the coronoid process. In making this objection, it is forgotten that the sharpest edge of the coronoid process is directed backwards towards the condyle; besides, the anterior edge is well cushioned over by the attachment of the temporal muscle. In three cases in which I had the opportunity of corroborating M. Nélaton's experience, I can only say that none of the patients complained of any inconvenience in this respect.—*Liverpool Med.-Chirur. Journal, Jan.* 1858, *p.* 37.

ORGANS OF CIRCULATION.

61.—ON THE USE OF THE CHLORIDE OF ZINC AS A CAUSTIC IN CASES OF ANEURISM BY ANASTOMOSIS.

By James F. West, Esq., House Surgeon at the Queen's Hospital, Birmingham.

[In Mr. South's excellent translation of "Chelius' System of Surgery" (vol. ii. p. 283), the application of a paste of caustic potash in an aperture of sticking plaster is recommended as the best means of destroying nævi, especially when the swelling is broad and superficial, when the knife is not applicable. Mr. West thinks it however far inferior for this purpose to the chloride of zinc, applied as directed by Mr. Ure.]

Mr. Fergusson remarks that "the caustic potash has been used with good effect;" but after mentioning the cases in which it is most suitable, he concludes by saying that he thinks the strong nitric acid is to be preferred to it. Both Professor Miller and Lizars speak of it as a dangerous remedy in consequence of the great probability of the occurrence of hemorrhage on the separation of the sloughs formed by its application. To this objection, however, the chloride of zinc is not liable: in the cases in which I have observed its employment, there has been no loss of blood—a dense white eschar has formed in the course of a few hours, which, on separating, in from four to seven days, has left a healthy granulating surface (perfectly free from all trace of erectile tissue), and has in a comparatively short space of time cicatrized and left a firm white indurated structure.

Nitric acid, though recommended by many surgeons of repute, has not, according to my experience, been at all satisfactory in these cases. It removes the integuments but does not attack the mass of enlarged and tortuous capillaries which lie beneath them, and on the contrary, it has frequently seemed rather to cause their augmentation than their obliteration.

In the case of the first child whose history I subjoin, the nitric acid was freely applied, but, nevertheless, the slough formed was perfectly superficial and the diseased growth not in the least implicated. The muriatic acid produces the same insignificant effect. Mr. South, in relating a case in which he had recourse to it, for the removal of a nævoid growth which implicated a great part of the scrotum of a child, found, that instead of "producing constriction of the vascular mass, it had only the effect of exciting irritation and hastening the growth, so that it soon acquired the size of an orange." On the reapplication of the remedy, the result was as unsuccessful as on the previous occasion. Nitrate of silver has according to my knowledge been even less advantageous than the acids or alkaline caustics. It is equally painful, has the same tendency to cause hemorrhage on the separation of the sloughs, while it is even less certain and uniform in its action than they are.

Lastly, the arsenical and mercurial caustics are totally inapplicable in consequence of the danger of their absorption into the system, an evil which might be anticipated in its fullest extent in the infants and children on whom we are most commonly called to operate, as it is in them that the disease is in the majority of instances found.

The merits which I claim for the chloride of zinc as a caustic, in cases of aneurism by anastomosis, are, that it is more powerful in its action, that it penetrates more deeply into the diseased tissues than any other caustic with which we are acquainted, and that above all others it is preferable in consequence of its property of coagulating the blood in the tissues surrounding the part to which it is applied; and thus it not only prevents hemorrhage at the time when the slough is thrown off, but also, through the formation of firm fibrinous coagula in the mouth of the vessel leading to the affected part, it obviates the possibility of a recurrence of the formation of erectile tissue in it. As a substantive proof of the efficacy of this mode of treatment, I am enabled by the kind permission of Mr. Langston Parker and Mr. G. B. Knowles, surgeons to the Queen's Hospital, to append the particulars of two cases which have been treated by the chloride of zinc, and in each of which a successful issue has been obtained.

Case 1.—Kate Weston, a healthy child, three months old, was admitted into the Queen's Hospital, under Mr. Knowles, February 23rd, 1857.

Her mother, a sensible woman, states that from the time of birth, a small red spot, scarcely larger than a pin's head, has existed at the back of the child's neck on the right side just below the ear; that for the first few weeks it appeared to retain its original size and appearance, but that lately it has greatly increased both in prominence and extent. She does not attempt to assign a cause for this mark, and says that her other children have no spot or blemish about them.

On examination there was also discovered another nævus of considerable size, which from its being almost colourless, soft, elastic, and subcutaneous, had attracted the mother's attention in a very slight degree. It was situated on the anterior aspect of the left side of the chest immediately below the clavicle, and an inch from the left border of the sternum.

It did not implicate the skin, but was confined to the subjacent areolar tissue; it was as large as a walnut, having an irregular ill-defined margin, and presenting a doughy elastic swelling, which became prominent and livid whenever the child cried. Pressure upon it caused a material reduction in its size, but did not completely evacuate its contents. The spot before-mentioned, was a true nævus maternus—of circular form, as large as a sixpence, with clearly defined margin, slightly raised above the level of the surrounding skin—of a bright red colour, and presenting numerous papillary elevations on its surface; it was situated immediately behind and below the mastoid process of the right temporal bone, in the fleshy part of the back of the neck.

To this spot strong nitric acid was liberally applied by means of a glass rod on the 25th of February, and a white eschar was formed by its means. The child cried for about an hour, and subsequently appeared to be free from pain: a bread poultice was then applied.

March 1st. The slough has not yet come away, although it appears to be separating at the edges. The centre is still red; the colour of the nævus being distinctly visible through the white thin slough. The child is not very peevish.

March 2nd. A slough as large as a sixpence came away, but it was evident on its removal that the integument alone had been affected by the caustic, as the anastomosing arterial twigs appeared even more distinct and vivid than before.

March 3rd. At 3 p.m., a paste composed of one part of chloride of zinc and four of flour was applied to the nævus for the thickness of a quarter of an inch, the surrounding skin being protected by plaster spread upon leather. On its application the child became very irritable, but in a few minutes appeared to have no sensation of pain.

At 9 p.m., the paste, which had formed a dense white slough, as large in extent but thicker than a shilling, was removed—no blood was lost: a poultice was applied.

March 9th. A slough as large as half a nutmeg came away yesterday afternoon: no blood was lost on the removal; the surface of the ulcer is quite pale and free from all nævoid appearance, but the surrounding skin presents a blush of slight inflammatory redness. The child is not at all feverish, and only fretful when the ulcer is dressed.

March 16th. The ulcer is quite healed; a slight depression of the size of a sixpence marks the site of the nævus, but there is no unnatural vascularity in the part, and the adjacent structures appear firm and healthy. The child does not appear to have suffered in condition or appetite.

March 20th. Nitric acid was applied to the surface of the cutis over the large pulsating tumour on the chest, and a white superficial eschar as large as a half-crown formed by it.

March 21st. At 11 a.m. the chloride of zinc paste made of the same strength as before was applied, the neighbouring parts being protected in the usual manner. It was allowed to remain on until 11 p.m. (twelve hours) when a large dense slough had formed, which appeared to implicate the whole of the diseased structure.

March 23rd. The slough, which is as big as a walnut—white and dense—is beginning to separate, a line of demarcation being already formed. The child appears to suffer but little.

March 28th. A slough not smaller than a halfpenny and weighing at least a drachm, separated to-day, leaving a reddish granulating surface, and without causing the slightest loss of blood.

April 3rd. The ulcer caused by the paste is filled with pale but healthy granulations, and there is no inordinate vascularity except at two points, of the size of a pea, from which there is an occasional oozing of bloody serum. The venous lividity and congestion of the surrounding skin is quite gone. The child's health remains good, and she is not at all irritable.

April 15th. The ulcer on the chest is quite healed; the cicatrix is dense and almost white, though when the child cries it becomes slightly turgid and red.

May 23rd. The cicatrix on the chest is smaller, paler, and more firm than the one on the neck; both, however, appear quite free from all trace of nævoid condition, and they are but very little congested when the child cries or makes any active exertion. She looks as well as she did before the treatment was commenced, and, in fact, can scarcely be said to have lost flesh or to have suffered any impairment of health during the whole of the period.

[In the second case mentioned the nævus was as large as a hen's egg, and situated on the right side of the forehead. The patient was a pale but healthy girl of twelve years old. The surface of the tumour having been denuded of epidermis by a blister, the chloride of zinc paste (one part to three of flour) was applied to the depth of a quarter of an inch, the circumjacent parts being protected from its action by a strong solution of gutta percha in chloroform. In thirteen hours the paste was removed; the surface of the nævus was then white and dry. It caused great pain for the first few hours, but this gradually abated. In two days a slough came away. In eighteen days it is reported that all trace of the nævoid structure seems removed, and a healthy granulating surface exists. In another week the ulcer was almost cicatrized, a very slight scar remaining.]—*Midland Medical Journal, Vol. I., p.* 240.

62.—*More than a Hundred Nævi on the same Infant.*—Nævi, as is well known, not unfrequently occur two, three, or more on the same subject. A case, however, in which their number has exceeded what we have either ever witnessed or noticed on record has been under observation amongst Mr. Hutchinson's outpatients, at the Metropolitan Free Hospital, for some months past. When first brought, the infant, a healthy boy, was three weeks old. His scalp, face, shoulders, body, and upper parts of the anus, were literally covered by a scattered crop of bright cutaneous nævi. These varied in size from a fourpenny-piece to a split pea, or even smaller, but the smallest, from the peculiarly bright and florid hue, were very conspicuous. Some of the largest were on the face and scalp. All of them were well circumscribed, and quite distinct from each other, and all appeared to be limited to the most superficial layers of the skin. The infant's appearance was very remarkable. Its mother stated that a few of the marks had been noticed on the day of birth, but that these had increased in size, and that many others had since come out. During the first week or two of her attendance at the hospital, the efflorescence continued, and on a third visit, an attempt being made to count them, they were found to number upwards of a hundred and fifty. The largest were now about the size of sixpences. The treatment pursued consisted in applying a little of the compound iodine ointment once or twice a-day to the spots separately, and in the course of a few weeks this appeared to be exerting a very perceptible influence. It was steadily continued, and now, after the lapse of six months, not more than a dozen remain, and those mostly on the scalp. It is intended to apply the nitric acid to these remaining ones, should they not diminish. The infant has retained excellent health, and the ointment (which is a favourite with Mr. Hutchinson for this purpose) has never caused any material irritation to the skin.—*Lancet, Jan.* 16, 1858, *p.* 63.

ORGANS OF RESPIRATION.

63.—ON A NEW TROCAR FOR PARACENTESIS THORACIS.

By Charles Robert Thompson, Esq., Westerham.

Although there exists considerable difference of opinion as to the amount and

nature of the risk incurred by the admission of air into the pleural cavity in performing paracentesis, there can be no question that it is desirable to avoid such an accident, as being never beneficial and often productive of bad results.

With this view several instruments have been from time to time invented; but there has been a want of simplicity, or a doubtful efficiency in them; so that many surgeons still use the ordinary trocar, trusting to such a clumsy expedient as putting a finger over the orifice, during inspirations, to keep out the air, or leaving it to enter freely at the latter part of the operation.

The instrument which I have now to describe, will, I believe, fulfil the required conditions.

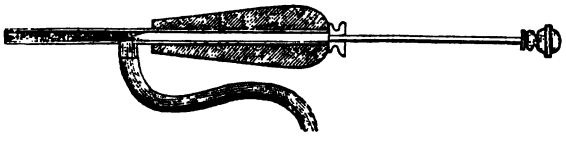
Fig. 1.

It consists of a cylindrical silver canula, about four inches long, and of the diameter generally used for this operation; into which opens, at near its middle, a short silver conducting tube of the same calibre, to which a piece of india-rubber tubing, about a foot long, is attached by a screw. In this canula plays a solid steel piston, with a trocar point; its body being of such length that when fully pushed forward (as in Fig. 1) its point protrudes sufficiently from the canula, and its other extremity seals the entrance of the conducting tube; and when fully withdrawn (as in Fig. 2) it retires so far as to open the conducting tube. This piston must fit the canula so perfectly as to be air-tight when greased. The little cap of the canula unscrews, to admit of the removal of the piston for greasing or cleaning. The outer half of the canula is mounted in a solid wooden handle, to give a firm grasp of the instrument.

The mode of using it is as follows:

Having well greased the piston, draw it back (as in Fig. 2) and, placing the end of the elastic tube into a basin of water, withdraw the air from it by suction at the end of the canula, and when the water reaches the lips push forward the piston. The elastic tube is now filled with water, which cannot escape, and the instrument is ready for use. When it is plunged into the chest, pull back the piston so as to open the conducting tube; when the fluid follows, and directly it meets the water in the tube, a syphon is formed. The end of the tube should be kept under fluid during the operation. If it is required to stop the flow, either during a fit of coughing or to change the receiving vessel, it can be done instantaneously by just advancing the piston sufficiently to cover the conducting tube.

Fig. 2.



The following appear to me to be advantages gained by this instrument:

1. That no atmospheric air can gain admission during the operation; and by making a valvular opening, and careful pressure as the trocar is withdrawn, no air ought to be admitted after its withdrawal.

2. The syphon action would, I imagine, assist in keeping up a continuous flow of fluid, so long as the wall of the chest contracts, or the compressed lung re-expands.

3. The power of stopping and re-admitting the fluid at any moment through the conducting tube, by a simple movement of the piston.

4. That if the tube should get blocked by lymph, or anything should arise during the operation to make such a course desirable, the instrument may be converted into a common open canula, by unscrewing the cap and removing the piston.

This instrument may be conveniently applied to other purposes for which the

common trocar is now used, as in tapping hydrocele, hydrocephalus, large chronic abscesses, &c. For paracentesis abdominis it is made of larger size, with an elastic tube three feet long. Here it presents great advantage over the ordinary trocar, by conveying away the fluid into the receiving vessel without any splashing, unseen and unheard by the patient; and by giving the power of so easily checking the flow by the piston, when required either on account of faintness or for the purpose of changing the vessel.

The instrument has been accurately made for me by Mr. Fergusson, of Giltspur-street, and it is very portable, and not expensive.

I have not yet had an opportunity of testing its efficacy on a living thorax, and should be much obliged to any surgeon who will try it, and let me know how it works.—*Med. Times and Gazette, March* 27, 1858, *p.* 329.

ALIMENTARY CANAL.

64.—NEW OPERATION FOR HARE-LIP.

By Dr. Allen Duke, Surgeon to the Chichester Infirmary.

Having for a long time considered the blemishes arising from the use of pins, however early they may be removed, as most objectionable in operations for hare-lip, as well as for those for cancer and other operations on the face, I would, as a substitute, strongly advocate the use of *internal sutures*, and the following mode of operating for hare-lip:—

The edges pared, not in the usual way, but by an oblique incision from before backwards slightly concave, and the reflecting bands of mucous membrane, freely divided, are to be brought neatly together by two or more sutures, each armed by two curved needles, which are to be introduced immediately under the skin, carried completely through the remaining thickness of the lip, and firmly tied *internally*.

To facilitate the removal of the two upper ones, the ends of the sutures should be brought out at the angle of the mouth, and secured externally by adhesive plaster, strips of which are to be applied the more firmly to bring and retain in contact the skin. The sutures may be safely removed in the course of a few days. Should there be a fissure of the jaw, and any portion unnaturally project, it should not, as is usually recommended, be entirely cut off, but partially severed, the edges pared on both sides and neatly adjusted by sutures, in order to fill up the vacancy and preserve the natural rotundity of the fore part of the jaw previously to operating on the soft parts.—*Lancet, March* 20, 1858, *p.* 287.

65.—ON SUDDEN ACCUMULATIONS OF FLUID IN THE SUBMAXILLARY DUCT.

By Jas. Hakes, Esq., Surgeon to the Northern Hospital, Liverpool.

[Diseases of the salivary glands are little noticed by medical writers, but, in fact, with the exception of that form of inflammation of the parotids called mumps, and after the administration of mercury, we seldom see them affected. Suppuration is very rare, as are also tumours, which, moreover, generally affect these glands only secondarily. Cretaceous deposits and obstructions of their ducts, from these or inspissated secretions, are sometimes found. Ranula is now supposed to be an encysted tumour, having no relation to the submaxillary gland, other than that of propinquity. A second form of this may occur in the mylo-hyoid space, not projecting so much into the mouth as externally.]

These are the only fluid tumours occurring in the mouth in connection with the salivary apparatus, of which I find any mention in the works of surgical writers. There is, however, another, remarkable in the mode of its occurrence, with which it is important that every surgeon should be acquainted, namely, a collection of fluid suddenly developed by an obstruction of the salivary duct. I have not been

able to meet with any case recorded, nor have I read any remarks which would suggest to me the idea that it was known to surgeons. I can scarcely suppose that in the extensive practice enjoyed for many years by the eminent men who have written their experience for our benefit, examples of it have not now and then occurred, seeing that in the past few years I have witnessed it in three or four persons. But if so, it is difficult to conceive why they have not published the cases, for they cannot fail to make a great impression on the beholder, and ignorance of their existence may place a surgeon in a dangerous position.

A consideration of two or three well-known facts cannot, I think, fail to make us regard the frequent occurrence of this sudden accumulation, as by no means improbable, and also lead us to anticipate the time at which they might be expected to take place.

The existence of salivary concretions is one of these facts; it must not, therefore, surprise us if at times they occupy and block up the small ducts which carry off the saliva from the glands. Again, the secretion of saliva is acknowledged to be pretty copious. Authorities vary as to the quantity secreted in twenty-four hours, some stating the amount as low as twelve ounces, others as high as eighteen. Though the secretion proceeds constantly, many things are known to increase the amount and rapidity of production, and especially the presence of food in the mouth, and the process of mastication during a meal. We have then but to suppose obstruction of the duct to take place about the time of taking food, and we have all the circumstances present necessary for establishing such an attack, if only the ducts are capable of sudden and rapid dilatation; this can be proved by experience alone, and however much we might feel inclined to say with Mr. Erichsen, when speaking of ranula, "It is not easy to understand how so small a duct can be dilated to so large a size as is occasionally attained by these tumours," I think the perusal of the following cases will leave no room to doubt the fact.

The first time that I saw this disease was in the person of a gentleman living at St. Michael's Hamlet, near Liverpool, to whom I was summoned in great haste one evening. He had been taking tea, and before the meal was over began to feel uneasiness about the mouth, and felt a swelling in the mouth and under the ramus of the jaw, in the region of the submaxillary gland, which increased so rapidly as to alarm him. While he was awaiting my visit, he had the swelling rubbed, with the effect of causing an escape of fluid into the mouth, and a subsidence of the swelling in the neck, so that on my arrival, I could perceive nothing beyond a little fulness in the submaxillary region. Continuing the friction, the swelling disappeared. I am not aware that he had ever previously suffered from the complaint, or since had any return. I made no examination of the duct but by the eye, and did not see any calculus.

The second instance occurred six or seven years ago, in a youth when only six or seven years old. He was eating his dinner, and in the midst of it began to complain of stiffness of the mouth and difficulty of deglutition; his mother very soon noticed a distinct swelling under the jaw. As some of the inmates of the house were at the time suffering from mumps, this was supposed to be a sudden attack; but on account of the suffering it caused, and its rapid growth, I was sent for. On examining the orifice of the submaxillary duct, a small white concretion, not larger than a pin's head, was discovered obstructing its orifice; this was easily removed, a quantity of saliva escaped into the mouth, and the patient was immediately relieved. A year or two afterwards, while he was at tea, the same thing recurred, but on this occasion the calculus was larger, and rather irregular in shape. After endeavouring for some time to remove the calculus, but failing, partly on account of the nervous restlessness of the lad, I fixed it by means of a pair of bull-dog forceps, and then cutting through the duct beyond the calculus, removed it, together with the orifice and enveloping portion of the duct. He has had no return since, but his mother informs me that he sometimes feels a little uneasiness in the situation of the gland, and gets rid of it by pressing underneath the margin of the jaw, which seems to displace something.

My third case, which occurred some years since, was in some respects the most remarkable of all, and though I made no notes of it, was accompanied by circumstances sufficiently ludicrous to fix it indelibly in my memory.

A prostitute called on a surgeon then living in Liverpool, about ten o'clock in the morning, for his advice. She stated that while she was taking her breakfast, she began to feel uneasiness in her mouth, to which was very soon added swelling under the tongue and under the jaw. As she continued eating, the swelling increased; and her sufferings became very severe. When she reached his house, there was a considerable swelling both in the mouth and under the jaw; she complained of intense pain about the jaws and neck, a sense of suffocation and difficulty of swallowing, and her speech was materially affected. He looked into her mouth, and seeing there was some slight ulceration of the tonsils, was seized with the impression that the internal carotid artery had become perforated by an extension of the ulceration, and that the blood, though prevented by coagula or some other cause, from escaping into the mouth, was being pumped into the cellular tissue of the neck, which accounted to him for the progressive increase in the size of the swelling as he watched her.

Overcome with this idea, his consternation was extreme, and his looks and manner communicated his alarm to the patient. No wonder, therefore, that the summons to his assistance was urgent, and would brook no delay. I took with me the needful instruments for ligaturing a vessel, though pretty confident that I was going to see a case like those I have already related. On reaching the surgeon's house, I was hurried down to his scullery, and there, to all appearance, he was endeavouring to destroy a young woman, partly by throttling, and partly by drowning; they were both standing near the sink, her head being bent down beneath a tap of cold water, the full stream from which was pouring over her bare neck and shoulders, and saturating the upper part of her dress, while he seemed to be strangling her with his fingers, though he informed me he was restraining the hemorrhage by compressing the carotid arteries. It was not without misgivings that he permitted me to release the poor wretch from the water-tap and his fingers, and when, having looked into her mouth, I recommended an incision to be made in the swelling, I believe he thought I was soliciting him to commit murder. However, his agitation after a time subsided; he was able to take a calm view of the case, and saw the correctness of my diagnosis, and opened the swelling freely in the mouth, from which there escaped at once several ounces of viscid saliva, which of course quite relieved all her distress, and removed all the swelling. We looked at the orifice of the submaxillary gland, but could not find the cause of the obstruction there. I had no probe small enough to pass along the duct.—*Liverpool Med. Chir. Journal, Jan.* 1858, *p.* 29.

66.—*Soft Sulphur for Stopping Teeth.*—M. H. Henriot has successfully employed soft sulphur as a substitute for the numerous cements used for decayed teeth. This substance, which acquires in a little time after its introduction into the cavity, a considerable degree of hardness, is insoluble in all bodies in the cold. It is not attacked by any of the alimentary substances or dentifrices, and is easily applied. All that is necessary is, to put some fragments of sulphur—or better, some washed flowers of sulphur in a glass tube sealed at one end, heat it over a spirit lamp, and pour into cold water. The sulphur should be heated to a temperature above 390° F., when we obtain, on pouring into cold water, a spongy mass, brown, soft, and elastic, which is called soft sulphur. It is known that the melted sulphur, if the temperature be sufficiently high, becomes thick and viscous, which is then again rendered fluid. The preparation thus obtained is introduced in the form of little balls, which are pressed into the decayed tooth. The soft sulphur may be prepared in two minutes.—*Journ. des Connais. Méd., and Pharmaceutical Journal.—Dublin Hospital Gazette, Jan.* 1, 1858, *p.* 15.

67.—ON THE RADICAL CURE OF REDUCIBLE INGUINAL HERNIA.

By T. Spencer Wells, Esq., Lecturer on Surgery at the Grosvenor Place School of Medicine, and Surgeon to the Samaritan Hospital, &c.

[Mr. Spencer Wells was the first surgeon who performed Wutzer's operation in Great Britain. It has in his hands been almost uniformly successful. Some of his cases have now passed ten, nine, seven, and three years, without any sign of return. He says on this subject:]

I think I may say, that the experience of British surgeons, so far as it has gone,

speaks strongly in favour of the operation, and if we look to the continent we find a much larger store of recorded experience. Wutzer, in a letter to me in 1853, says, "I am not able at present to give you the statistical results of all the cases upon which I have operated, as I have not time to collate them. I can now only say that, since the autumn of 1838, I have repeatedly practised my operation in the clinique every session before many witnesses, and that I have never seen severe peritonitis follow it, still less any fatal result. All those operated on have not been cured. In several, relapses followed, but this was traceable either to the patient leaving off the truss too soon, or undertaking very hard bodily labour soon after the operation." Professor Sigmond, of Vienna, informed me that he had performed the operation nineteen times in the great hospital of that city, with complete success in fifteen cases. No death happened, but in two cases there was some gangrene of the integuments, and two relapses occurred.

Last autumn I was in Munich, and I called upon Professor Rothmund, who has a larger experience of the operation than any other surgeon. I saw him perform the operation in one case, and saw two men upon whom he had operated, on one three days, and on the other ten days before. I had a long conversation both with the Professor and his assistants. They said the increasing number of patients coming for operation was the best proof of its safety and success. At first Rothmund found it difficult to induce ten patients to submit to it in a year. Now they apply every day. They are mostly working men; and one tells the other how he has been cured. On inquiry as to relapse the answer confirmed my previous impressions, namely, that in cases where the canal is not larger than to admit the finger easily, the radical cure may be relied on with almost absolute certainty, and that the probability of a relapse increases with the size of the canal and rings. When the rings are very large and the canal very short, the chief use of the operation is to make a truss effective. In these cases of widely-dilated rings and short canal, my impression was that the operation might be hazardous, but the experience at Munich shows that this fear is unfounded, provided very large cylinders be used, so that the rings are well filled and descent by the side of the cylinder is impossible. Rothmund has done the operation 400 times in the Clinical Hospital at Munich, and he told me he has done it much more frequently in private practice, so that he felt convinced he must have operated a thousand times, and without one fatal result. This, I think, is more than almost any one could say of the most trifling operation. No one could expect to do a thousand operations for hare-lip —to tie a thousand nævi or piles—to remove a thousand small tumours—in fact, to do the most trivial surgical operation a thousand times, without some untoward result following, accidentally, in some one case. So that this evidence is very strong indeed in favour of the almost perfect safety of the proceeding.

You see I am anticipating objections already; I do so because there is still so strong and general a feeling among surgeons against the adoption of any operative proceeding whatever for the radical cure of hernia, that I feel it necessary at the very outset to convince you that I am not advocating some novel and dangerous innovation, of the safety and propriety of which I am not fully assured. I have really proceeded with great caution—I may say too great caution—in this matter, under the influence of the general prejudice against any operation of this kind. I was very careful indeed—too careful I think now—in the selection of cases. I waited two years after my first case before I found a second patient—four years after my second before I found a third—willing to have the operation done upon the very qualified manner in which I advised it. I did not venture to urge the operation upon patients. It was only when warmly requested to do it that I consented; and when I read the paper in 1854, I did not advocate it very strongly, but simply asked the members of the society "to consider how far the evidence I have adduced of its safety and success should lead to its further adoption in this country." With further experience, however, and especially since my visit to Munich, I feel much more confident, and take every opportunity, in suitable cases, of recommending patients to submit to the operation, and of bringing it before you and the profession generally.

Before showing you the instrument of Wutzer, and the modified instrument of Rothmund, which I now use, it will be well to make you acquainted with the principles of the operation. There are two ways by which the radical cure of re-

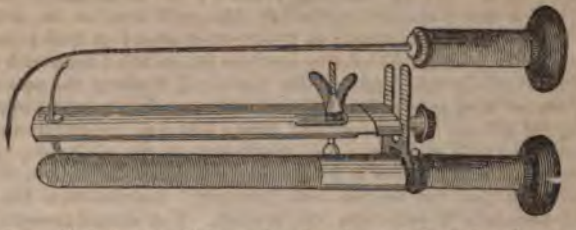
ducible hernia can be effected. The sac may be destroyed or closed, or the sac and hernial apertures may be filled up. A great variety of proceedings, with the first object in view, have been adopted from very early periods in the history of surgery down to the present time. Celsus advised incision of the integuments and sac, so as to lay open the sac, and allow it to heal by granulation. This practice was followed so lately as by Pott and Abernethy, but the most dangerous results followed. Then castration was performed in the hope of closing the sac, and it was carried to such an extent in France that it was made penal by statute. This led to what was called the "Royal Stitch," because by leaving the testes uninjured, it "gave subjects to the king." This operation consisted in laying bare the sac, excising a portion of it, and bringing the upper remaining portions together by suture. Then the sac has been destroyed by caustics or the actual cautery. It has been tied close to the ring, after exposure, by incising the integuments. It has been tied subcutaneously by passing pins beneath it. The adhesion of the opposed surfaces of the sac, and consequent obliteration of the cavity, have been attempted by subcutaneous scarification, by acupuncturation, and by the injection of iodine. This injection of iodine is alluded to by Mr. Fergusson in his last edition, as a plan followed in America by some charlatans who attempt the radical cure of hernia by a secret method. Mr. Fergusson seems to think well of it, though it proved very unsuccessful in the practice of its originator, Velpeau. Indeed, any attempt merely to obliterate the sac, putting aside its great danger, is bad in principle, because the mere obliterated sac offers very little impediment to a new hernial protrusion. We must do more than this. We must contract or close the passage through which protrusion takes place. Now all attempts to do this, with the single exception of compression, have been exploded as dangerous or useless. Compression by a truss and well-fitted pad, properly applied, frequently leads to the radical cure of hernia in young persons, by exciting exudation and adhesion. In adults, however, a radical cure is so seldom effected in this way that we all look upon compression after the age of puberty as a simple safeguard against the descent of the hernia, very seldom attempting to produce a radical cure by a truss; and when the attempt is made, it leads in the great majority of cases to disappointment. The principle of the second plan is closure of the hernial canal by a portion of skin, forming a sort of plug pushed into the canal, and made to adhere in its new situation. In other words, the inguinal canal must be closed by a portion of the scrotum pushed into it, and fixed there. It can be only fixed there securely by adhesive inflammation of the serous coat of the sac occupying the canal, and it is necessary for the safety of the patient, that the inflammation so excited should not extend to the peritoneum lining the abdominal cavity.

I do not wish to assert that the sac can *never* be pushed before the invaginated scrotum. On the contrary, you may meet with cases where the patient has not worn a truss, in which the sac can be pushed completely into the abdomen. In other cases of old herniæ, where the sac has been thickened and the surrounding cellular tissue is very loose, the same thing may happen, the sac hanging into the abdomen from the internal ring like an empty purse.

I will now show you Gerdy's operation on this subject. The invagination of the skin of the scrotum is the first stage of this operation, as it is in that of Wutzer, but Gerdy merely fastened the plug in its new position by a suture. You see I now form the plug, push the needle along my finger, through the canal and integuments, fasten the thread, withdraw the needle, then make a second puncture, cut off the thread, and remove the needle. I could do the same thing easily with two needles, one at each end of the thread. In either case this diagram shows you the result, and I feel convinced that it represents what really happens in most cases, and I suspect Wutzer is right when he says that the puncture of the sac is almost necessary to secure firm adhesion. The result of this suture is just what you would expect—union of the opposed surfaces of the sac at one point. This slight union would appear likely to give way before very light force, and this proved to be the case, for relapses were extremely common after operations performed in this manner. A more

perfect closure of the canal than can be obtained by Gerdy's operation being evidently desirable, various plans were devised for effecting this closure. The diagram below is from an instrument made by Wūtzer's own maker in Bonn.

In this diagram the entire instrument is shown below, while above there is a second view of the needle which passes through its centre when withdrawn.



The cylinder, which is intended to take the place of the index finger after it has pushed a plug of scrotum through the ring in the canal, is made of very hard wood of different lengths and diameters according to the condition of the canal in each case. In its centre is a canal through which an elastic steel needle passes, and comes out on the upper surface near the point. Over this a concave cover, also of hard wood, is made rather wider than the cylinder, with an opening to admit the point of the needle, and another opening for a metallic staff which rises from the cylinder near the handle, on which a screw works, by which the cylinder and cover can be screwed together. The handle of the needle can be removed by unscrewing.

After using these instruments of Wūtzer's I soon found certain alterations desirable. The needle got rusty, caused undue irritation at the point of puncture, and became unfit for use again. This was soon obviated by electro-plating it. Then the necessity for varying the size of the cylinder in each case was troublesome and expensive. I obviated this, though imperfectly, by rolling strips of adhesive plaster round the cylinder until I made it as large as I desired. But this led to irregular pressure, and in Mr. Stretton's case caused a little sloughing, which though it did no harm might as well have been avoided. The cylinder, too, was too round for the normal shape of the canal. The point of the needle had to be guarded by a piece of cork, which would be perversely knocked off sometimes, and, worse than all, there was nothing to prevent the needle itself from slipping back—the only thing keeping cylinder and cover in their place. I had thought of different plans for correcting these faults, but not of anything so good as those for which we are indebted to Professor Rothmund. It is made precisely on the same principle as that of Wūtzer, and at first sight resembles it exactly in appearance, but the cylinder is oval, not round; the needle is not steel but silver, with a movable steel point, and there is a knob which can be screwed on after the point is removed, and at the handle there is a spring which is an effectual safeguard against the needle slipping from its place. Lastly, in order to admit of the same cylinder serving for the occlusion of canals of various dimensions it is so made that side pieces of different sizes can be fitted on to the central portion of the cylinder. I have here covers of different sizes, and you see that by altering the side pieces I can make the cylinder quite as large as one needle could fix well. In cases of very large rings and canals it is necessary to have the central piece perforated for two, or even three needles.

Now see what power this instrument gives us. We can alter the dimensions of the cylinder so that while perfectly filling the canal it may push the plug of the invaginated scrotum before it well up to the internal ring, and even project some little distance into the abdomen. We can fix the plug much more securely and evenly than by a suture or either of the other compressing instruments, and we have complete command over the degree of pressure exercised.

Now for the manner of using the instrument. I need hardly say that the patient's bowels should be opened a day or two before the operation, and the rectum cleared the same day by an enema of warm water; the bladder is emptied, and of course the hernia returned if it be down. This being done, you place the

patient on his back, with the shoulders raised, the thighs semi-flexed, and the knees separated, just as if you are about to reduce a hernia by the taxis. You place yourself on the side you are about to operate on.

If you can use right and left hand equally well, you may use the left forefinger for invaginating on the left side, and the right to hold the instrument—the reverse for the right side. But the left finger will do for invaginating on either side very well. You see I operate on the left side—so I stand on the left side of the patient. I place my left forefinger on the scrotum, about an inch below the external ring, and then push a fold of the scrotum before my finger with a little rotatory movement slowly and steadily into the canal, keeping the palmar surface of the finger turned forwards and a little outwards, until it is well under the tendon of the external oblique, and the plug of scrotum is well pressed up to, or through, the internal ring. If you place one forefinger on the abdomen, just over the internal ring, while the other is in the canal beneath the tendon of the external oblique, you will feel the tendon very distinctly. As you move the finger backwards and forwards it rolls over the tendon. You should accustom yourselves to feel this, because it is the test by which you know and can be certain that you are well in the canal, and when you have introduced the cylinder that it is in the canal, and has not slipped anterior to it. When you are quite sure that your finger is in the canal, the next thing is to get the cylinder into the place of the finger, and then to fix it there by the needle. To do this, you take the cylinder with the needle passed within it as far as you can without permitting the point to project, and hold it in the right hand with the thumb before the screw, the forefinger and second finger on either side of the prong which supports the cover, and the ring and little finger on the under side of the cylinder. Then bend the left forefinger a little, draw it forwards, and slip the cylinder along its dorsal aspect at the same time as the finger itself is being withdrawn. This is the most important step of the whole operation, and the only step which is at all difficult. Without care the plug may follow the finger. Without care the cylinder, instead of slipping beneath the tendon of the external oblique, may slip between it and the integument. You must be very careful that this does not occur, by feeling, as you felt when your finger was in the canal, that the tendon rolls over the cylinder. If you do not feel this, and if the cylinder moves freely beneath the integument, you may be quite sure it is not in the canal, and you must begin again. I wish particularly to guard you against this mistake, because I *know* it has been made at least once, and I *suspect* oftener. If you feel the tendon rolling over the cylinder, you may be quite sure it is in the canal, and the end well up to the internal ring. To fix it there I have only to push on the needle till its point appears through the abdominal parietes, then to put on the cover, and use the horizontal and perpendicular screws until the cover and cylinder are evenly pressed together. Then the point of the needle is unscrewed, the knob put on, the handle of the needle removed, and all is done. You leave the patient with the instrument secured thus.

The whole affair does not take a minute, and as the only part of it at all painful is the simple puncture of the needle, it is quite unnecessary to give chloroform.

This diagram shows what I believe to be the real action of the instrument.

Here you see how plug, sac, and integument are fixed and pressed together. In some few cases the sac may be pushed up before the cylinder, in some only a very small portion may be below the needle, and in others it may extend throughout the whole line of compression. If the cylinder fill the canal well, the pressure is quite sufficient to cause adhesion behind as well as before the cylinder. Some to insure this have kept up pressure on the cylinder by a compress and bandage; but this is unnecessary, and even injurious, as it leads to inflammation of the spermatic cord.

I should have told you that you should oil the cylinder before using it, or else smear it, as Rothmund does, with cantharides ointment. Wutzer does not think it at all

the adhesion of the sac as the really important part of the operation. Rothmund, however, thinks additional security is obtained by removing the epidermis, and thus procuring adhesion of the opposed surfaces of the plug. He thinks also the irritation of the skin set up by the cantharides hastens the adhesive process in the sac, so that the instrument may be removed as soon as the fifth day, instead of leaving it to the seventh or eighth. He speaks from such very large experience that I feel inclined to follow his practice for the future, although I am sure it is not at all *necessary* to success.

Then as to the degree of pressure you apply with the screw upon the cover—it should be very slight the first day to allow for a little swelling. The next day the screw may be tightened or loosened according to the state of the skin. The patient should be kept in bed lying on his back, with the knees raised by a pillow, and the scrotum supported by a cushion or folded towel or two put between the legs. Every day the cover should be raised, to see whether the pressure is equal and not too great. If it does not press evenly, a little cotton wool may be inserted, or if it press too much at any point, this may be raised by a little cotton put near it.

About the fourth or fifth day you see a little inflammatory redness and swelling round the needle puncture and commencing suppuration. On the sixth or seventh some serous fluid begins to escape round the end of the cylinder. This shows that the epidermis is separating. There is more purulent discharge from the puncture, and the instrument may then be taken away by withdrawing the needle, and carefully removing the cylinder. You will find that the skin of the scrotum may be pulled tolerably hard without yielding at all, showing that pretty firm adhesion has taken place. If it appear to yield on pulling slightly it would be well to replace the instrument for two or three days longer.

The after treatment will vary a little, according to your desire to produce adhesion of the opposed surfaces of the plug to each other or not. Wützer filled the cavity left by the withdrawal of the cylinder with charpie, dressed the puncture simply, and then put on a common bandage. Rothmund endeavours to obliterate the cavity. He keeps the patient in bed, raises the scrotum by a suspensory bandage, keeps off the pressure of the bed-clothes by a cradle, applies simple dressing to the puncture, and over this a graduated compress which is made to exert some pressure and keep the two sides of the cavity together by a common figure of eight bandage. The bandage is changed as often as it becomes dirtied by secretion, and is carefully reapplied. It requires from twelve to fifteen days to secure obliteration of the cavity and cicatrization of the puncture. As I said before, it is only Rothmund's great experience which would lead me to think much of the importance of this obliteration. I tried it in my second case, but no union took place, and in cases where union has taken place the condition of parts a few months after the operation has been precisely similar to those in which Wützer's practice was followed. Perhaps a middle course will eventually be followed, not filling the cavity with charpie, nor keeping the patient to bed or sofa after cicatrization is firm, and leaving the cavity to close if it will under the pressure of a compress and bandage, but not being sufficiently anxious about it to prolong the confinement of the patient. In either case the inguinal canal is filled by a firm plug, and for some weeks a sort of puckered depression is seen at its mouth, but this disappears after a few months, although the plug may still be felt. After five or six years the plug itself can scarcely be felt, and the most careful examination can hardly detect anything abnormal. Rothmund convinced himself that this could not be explained by the sinking of the invaginated scrotal plug to its former position, by tatooing round the opening of the cavity, and observing that the marks did not change their position as they would have done had the plug descended.

If the pressure has been unequal, or the instrument left a day or two too long, there may be a little sloughing round the needle; but I have never seen a slough larger than a sixpence, and this only once. The only ill effect of it is some delay in the cicatrization. I believe if there is ever more sloughing than this, it must be from carelessness of the surgeon, or some unfortunate constitutional condition of the patient, or the crowding and defective ventilation of some hospital ward.

Allowing six or seven days for the period the instrument is applied, and from seven to fourteen days more till cicatrization is complete, you should generally

prepare a patient to expect a confinement of three weeks to his room. After this he must wear for two or three months a very elastic truss, with a weak spring and large well-stuffed pad. If the pressure is too great, or the pad too small, absorption of the plug may take place, and relapse of the hernia follow. If no truss be worn, the adhesions, which are still soft and yielding, might give way. It is also well to have a suspensory bandage worn as long as the truss, that the weight of the testicles may not drag down the skin of the scrotum to its former position. You should also forbid violent exercise until the truss can be left off. After three months the truss may be left off, and I believe the patient is fully as secure against the occurrence of hernia on the side operated on as on the other side; perhaps more so; in other words, that he has not only been cured radically of his hernia, but he has been protected against its recurrence—he is less likely to become subject to hernia on that side than a healthy man.

We are still in want of knowledge of the precise anatomical conditions resulting from this operation, which post-mortem examinations alone can afford.—*Medical Times and Gazette, Jan.* 23, 1858, *p.* 79.

68.—ON THE RADICAL CURE OF INGUINAL HERNIA.

By Holmes Coote, Esq., Assistant-Surgeon to St. Bartholomew's Hospital, &c.

[Various means have been resorted to at different times for the radical cure of this disease, as the application of the actual or potential cautery, applying a ligature to the neck of the sac, &c., but in all, the evil generally counterbalanced the good, either from the barbarity of the proceeding, or the destruction of important parts. In the latter case the spermatic cord would be destroyed, and very generally the operation when gone through, produced a cure (if one at all) the permanency of which was very questionable.]

It is within the last few years that the principle of invagination of the integument has been thoroughly applied to the cure of reducible inguinal hernia; and the success which has attended some operations is sufficient to warrant a fuller consideration of the subject. A portion of the scrotum is invaginated, and thrust by the finger of the surgeon into the inguinal canal, where it is retained some days by a proper instrument, until firm adhesions have formed. This plug, which undergoes a fibrous degeneration, and feels like a hard cord, is firm enough to prevent the descent of the intestine, and is, I believe, sufficiently persistent to be of infinite value to the patient. But the French surgeons became fearful of the yielding of the plug; they even asserted that in a few weeks the integument escaped from the canal and resumed its normal appearance. Hence, Gerdy removed from the invaginated integument the cuticle by means of caustic; and Dr. Berne, of La Charité, Lyons, acts yet more deeply by the use of the chloride of zinc: he produces a linear eschar both in the reflected integument and on the corresponding surface of the abdominal parietes, with the idea of making a firm cicatrix.

The invaginated integument is usually held in place by a wooden plug armed with a needle, which is passed through the walls of the abdomen; and Velpeau affirms that this part of the proceeding is not unattended by danger of wounding the epigastric artery. The accident may be avoided by the usual precaution; at all events it has hitherto proved an imaginary danger, although the operation has been performed in this and in other countries above a hundred times.

I will not, in alluding to the success which has hitherto attended the process of simple invagination of a portion of the scrotum into the inguinal canal (commonly called Wützer's operation), refer to cases performed abroad, because it is impossible to ascertain the actual result without having the opportunity of both seeing and conversing with the operator; but I will give a tabular report of cases treated by professional friends in England, for whose accuracy and veracity I offer myself as guarantee.

First, I beg to refer to some cases treated by Mr. Spencer Wells, and related by him in the thirty-sixth volume of the 'Transactions of the Royal Medical and Chirurgical Society.' He states that he has had no unfavourable report from any

Mr. Vaudin, of Jersey, relates in the 'Medical Times and Gazette,' 1846, the particulars of three cases similarly treated. M. Le T., æt. 42, the subject of oblique inguinal hernia of the left side, underwent the operation, as proposed by Wūtzer, May 12. He was confined to bed eight days. On the ninth the instrument was removed, and a compress of oiled lint was fixed over the part by a T bandage. After this he sat at home for three or four days, and then resumed his usual avocation without a truss. On the 14th day the slight wound made by the stilet or needle had healed. Sept. 2, he was in perfect health: there was no tendency to hernia.

Mr. Jones, of Jersey, performed the same operation on N. N., æt. 36, labourer, the subject of oblique inguinal hernia of the right side, of eight years' duration. The integument was invaginated by means of Wūtzer's instrument, January 5, 1856. The instrument was removed on the ninth day. Six months afterwards the patient was seen perfectly well.

The same surgeon operated, April 1, 1856, on Thomas G., a Canadian, also the subject of oblique inguinal hernia. Four months afterwards the lad was doing his duty as a cabin boy, without a truss.

I performed the operation, October 7, 1856, on Thomas B., an engineer on board one of Her Majesty's steamers. I did not sufficiently include the internal abdominal ring, which had been drawn nearer to the pubes than normal; consequently, the relief was imperfect, and the plug seemed to disappear. Accordingly, early in December, I repeated the operation, taking care to include the whole length of the inguinal canal. The instrument was removed on the ninth day. Five months afterwards I saw this patient in perfect health.

Shortly afterwards I performed the same operation on a carpenter, in St. Bartholomew's Hospital, with equally favourable results. This patient might at the present time dispense with the truss (about two months after quitting the hospital).

At the British Hospital, Renkioi, Dardanelles, Mr. Stretton operated on Stephanie, a Greek carpenter, April 22, 1856, who had been the subject of inguinal hernia of the right side for three years. On the sixth day the instrument was removed, when a small slough was noticed, near the point of the needle, the size of a sixpence. On the twenty-first day, this patient was so well that he resumed his work on the hospital huts, without a truss.

Of fifty-six cases, performed in different countries, in 1854, no instance of death had occurred; and even at the present time it is doubtful if any fatal accident can be reported as directly a consequence of this operation, performed now between one hundred and two hundred times.

I prefer this operation, owing to the simplicity, the painless character, and the freedom from danger of the proceeding, to any of the more complicated measures which may merit a passing notice.

Dr. Jamieson lays open the sac, and then fills the ring with a portion of integument, cut into proper shape and inserted.

M. Graefe lays bare the neck of the sac at the external ring, cuts it through, and then introduces, as far as the internal ring, lint covered with some irritating application.

M. Bonnet, of Lyons, operates in the following way: the contents of the hernial sac having been returned, he pushes a pin, which has been passed through a piece of cork, through the integuments and neck of the sac, as near as possible to the external ring, care being taken not to touch the spermatic cord. The pin is carried through the opposite integument, and the point is inserted into another piece of cork. Two or more pins may be required to excite adhesive inflammation.

M. Mayor, of Lausanne, uses needles carrying ligatures for the same purpose.

Scarification of the neck of the sac, as practised by Guerin; acupuncture, scarification, or injection, as recommended by Velpeau, do not appear to me to possess the advantages, combined with the safety of the operation, as recommended by Wūtzer.

Dr. Pancoast, of Philadelphia, has performed subcutaneous injection without accident, but with uncertain success, thirteen times. The hernial sac (the interna contents having been returned) was punctured through a canula by a small trocar

Having ascertained that the instrument was fairly in the sac, by the freedom with which it could be moved about, the point was directed upwards so as to scarify the internal orifice of the upper part of the sac. The trocar was then withdrawn, and half a drachm of the tincture of iodine, or cantharides, was injected slowly, by means of a small syringe fitted to the canula. The canula was then withdrawn, and a compress was applied. Severe inflammation occurred in only one case.

When we remember that, according to Mr. Bryant, out of 84,478 cases of hernia, 88 per cent. were inguinal, and 11 per cent. femoral, we may imagine the importance of every operation by which the inguinal canal might be with safety closed. I must confess that at the present moment I prefer the operation of Wutzer, namely, that of simple invagination, which has proved successful both in my own hands and in those of others, and is apparently free from risk.—*Midland Quar. Journal, Vol.* I., 1857, *p.* 17.

69.—*Use of Coffee in the Treatment of Strangulated Hernia.*—By Dr. Joseph B. Sammut, Malta.—Having lately perused an Italian medical journal, I was struck with the simplicity of a remedy proposed for cases of strangulated hernia, the efficacy of which I have since had occasion to prove. Not having observed any mention of it amongst the several remarks on this subject in our journal, I think it might not be unacceptable to draw attention to a method of cure at once so simple and easily obtained. The case was as follows. A coloured man, aged about 55, very robust, cook in a merchant vessel, had been in the habit of wearing a truss for an incipient inguinal hernia, but had left it off for some time. On the evening of Oct. 7th, he, having spent some hours on shore, returned on board somewhat intoxicated, and commenced wrestling with some of the men, when, on a sudden, he felt so severe a pain in the right inguinal region, as to lead him to suppose he had received a kick, but which, from subsequent information, I have reason to conclude was not the case, but simply the hernia descending into the scrotum. He was put to bed, and in some hours afterwards symptoms of strangulation appeared. I did not see him till the following morning between seven and eight o'clock. Having placed him in a convenient position, I tried the taxis, but the patient could not suffer my touching him. I then determined to try strong infusion of coffee (one ounce to each cup), when, to my surprise, after drinking the first cup, the patient's face appeared less anxious, and I was enabled to reduce the hernia with little trouble. This was a result hardly to be anticipated, as the desired effect does not usually take place before administering half a dozen cups, allowing a quarter of an hour to intervene between each. This remedy is frequently used in Habana with success, and has been often tried with equal success by many practitioners; at times in combination with the bath, belladonna ointment over the tumour, &c.—[Compare the above with a short article on this subject in our last volume. Ed. *Retrospect.*]—*British Med. Journal, Nov.* 7, 1857, *p.* 926.

70.—ON THE TREATMENT OF INTERNAL PILES AND PROLAPSUS ANI BY NITRIC ACID.

By Hy. Smith, Esq., Surgeon to the Westminster General Dispensary.

[The ligature is usually looked upon by our best surgeons as the most effectual means of treating internal piles. This is true, but the operation is attended with a necessary confinement to bed, sometimes with severe suffering, and occasionally it is followed by death. In a large proportion of cases, the application of strong nitric acid to the parts will obviate any severer operation.]

The following is an instance of its beneficial employment in prolapsus ani.

Mr. S., aged 59, applied to me March 3. He was in excellent health, but had suffered several years from a prolapsed gut. It always descends when he goes to stool, and generally when he walks out. On examination I found a considerable protrusion of the mucous membrane of the rectum. He has, in consequence,

suffered lately from great irritation of the bladder, and has complete retention of urine. I recommended the patient to use an injection of oak bark.

March 9. The gut is much prolapsed, and the patient has suffered greatly from irritation of the bladder. I applied nitric acid very freely, and having well oiled the parts returned them.

12. The gut does not come down so much, and on examination to-day, it is difficult for him to protrude even a small portion. I applied the acid again.

20. I have applied the acid once since the last report, and he has called upon me to say he is quite well, and to express his gratitude for relief from sufferings which have troubled him for years.

In such a case as the foregoing the relief given by the application of nitric acid is striking; but there is another class of cases in which the benefit afforded is equally remarkable. I refer to those instances of internal piles when there has been more or less hemorrhage for some time.

Mr. A., aged 23, sent to me by Dr. Beaman.

May 21. He is in a weak state of health, and presents the appearance of one who has lost much blood: has been subject to piles for three years; they protrude when at stool, and he has every day during the last three months lost a large quantity of blood. On examination I found the mucous membrane of the lower part of the rectum in an unhealthy condition, and a large hemorrhoidal excrescence protruding. I applied the nitric acid pretty freely.

25. Much the same; the bleeding has not ceased; and the hemorrhoid still protrudes. I made the patient sit over some hot water for some time, and when the piles were thoroughly protruded, I applied the acid freely.

28. A good deal of irritation was produced by the acid for several hours, but it gradually went off, and on examination there is no protrusion.

June 1. This patient has very much improved. There has hardly been any bleeding or protrusion. I applied the acid slightly to the diseased part of the gut which could be brought into view.

6. He feels quite well, and has no protrusion of the gut even while at stool.

Mr. B., aged 29, also sent by Dr. Beaman.

Oct. 6. States that he had been troubled with piles for two years, and that during the last six months he had suffered daily from bleeding, which was increased by horse exercise, to which he is much addicted.

The day before I saw him he had consulted an eminent surgeon, who requested him to come to his house on the following day, and remain sitting over hot water so that the gut might be protruded; but the patient fearing that an operation would be performed declined. I advised the gentleman to take a dose of castor oil on the evening of the 7th, and to come to me on the 8th; on which day a highly vascular and thickened hemorrhoidal mass was protruded; I applied nitric acid freely to it, and returned it within the sphincter.

9. He sent for me to his residence to-day. I found him in considerable pain: the diseased part had descended outside the sphincter, and the surrounding textures were much swollen. I returned the piles, ordered him to lie in bed for a few hours, and recommended hot fomentations and an opiate.

13. The patient went into the country until to-day: he has scarcely any bleeding: he took castor-oil before coming, and I applied nitric acid to the portion of the diseased bowel which was protruded.

20. The patient scarcely complains of anything, except a very slight bleeding when at the closet. There is now no protrusion. I had slightly used the acid on the 15th. To-day I examined with the speculum, and touched that part of the gut which seemed in an unhealthy state.

24. This gentleman suffers nothing from pain or protrusion even when at stool: but I examined with the speculum again, and applied the acid as there was some slight bleeding. I recommended the use of an injection of two grains of sulphate of iron to an ounce of water, into the rectum twice a-day. I learned afterwards from Dr. Beaman that this gentleman was quite well, and ardently enjoying his favourite pursuit of hunting.

This instance illustrates in a particular manner the advantages of nitric acid; for here was a young and healthy man, passionately fond of field sports, and would brook no control, who was very anxious to get rid of his disease, but would not

submit to an operation which would confine him to bed for several days. I could, however, offer him a means of cure which would not lay him up, or prove dangerous. It is true that the very free use of the acid did confine him to bed for a few hours. This accident cannot always be avoided, but it has not occurred more than two or three times in my hands. There is one other point in connexion with the use of the agent, which this case also illustrates, viz. the amount of pain produced when the acid is applied through the speculum. On both occasions on which I used it the patient actually asked me after the mucous membrane had been freely touched, whether it had been applied or not. In fact he complained more of the introduction of the speculum, although a small one.

It is most important in the treatment of diseases of the rectum by nitric acid that the cases should be selected, otherwise the surgeon will be disappointed in the result, and the patient will be rendered worse than he was before. It is in those cases of internal piles, where the diseased texture is only of moderate extent, has a broad base, and presents a very vascular appearance, as though the excrescence was composed chiefly of minute arterial branches, that the acid will prove speedily and effectually serviceable; when, however, the hemorrhoidal excrescences are very large and of a blue appearance, mainly consisting of venous ramifications, nitric acid should not be applied; neither should it be applied while a patient is suffering from what is called an acute attack of piles. I was unwise enough to use it in a case of this kind not long since, and although I believe the patient may have been ultimately benefited, great temporary distress was produced, and undeserved blame was thrown upon the remedy.

In cases of prolapsus ani of considerable size, when there is not a complication of large or several piles, and when the mucous membrane is simply thickened and relaxed, this remedy will be eminently serviceable. I have by means of it lately relieved a gentleman of the necessity of wearing a pessary, which he had done for years, being afraid to undergo a cutting or tying operation; and being ignorant of the efficacy of nitric acid in such cases until he had his attention called to one of my papers in the 'Medical Times.' I have very recently been attending, for another complaint, an old gentleman, who has for many years worn a pessary for a prolapsus as big as my fist, who will not permit any operation. Here, however, nitric acid would I fear not be applicable.—*Med. Times and Gazette, Jan.* 16, 1858, *p.* 58.

71.—CASE OF IMPERFORATE ANUS.

PROPOSED MODIFICATION IN OPERATIVE INTERFERENCE.

By Redfern Davies, Esq., Birmingham.

The surgical epoch in which congenital imperforate anus will cease to be regarded as an anatomical *lusus naturæ*, or as an opprobrium to the art and science of our profession, will arrive only when success shall uniformly crown our efforts. At present, how few, how extremely rare, are any recorded cases of individuals born with this deformity, and living! The pages of our own and of foreign journals, though occasionally relating some solitary instance of partial success, are wonderfully barren in any accurate details on the subject; indeed, whether as to anatomy, physiology, or treatment, since the writings of Amussat, nothing has been improved upon, little or nothing has been in fact done.

The rectum, and its terminal apparatus, the anus, is formed, as is well known, by the descent of the former in the pelvis, which in due time meets the anus, and becomes incorporated with it; whilst simultaneously the membranous septum, which before had closed the end of the gut, becomes absorbed, giving place to what will best be fitted for the performance of the coming functions of life. In either of these parts of the economy, or both at the same time, arrest of development may occur. It may be complete or partial—thus producing the various forms of imperforate anus which have been seen. Malformations are also due to disease in intra-uterine life. Cases are reported showing evidence of inflammation having existed within the rectum (*rectitis*), whereby the coats became adherent and the rectum impervious.

Anatomical Characters of Imperforate Anus.—1st, and simplest form of arrested development, is when the anus and rectum are both normally formed, but the membranous septum of fœtal life still exists between the two.

2nd. *Malformations of the Anus.*—Of these there are an almost infinite variety. The integument of the perineum may pass over the mucous membrane of the aperture from one side to the other, or only partially over it—producing more or less blocking up of the passage, and usually presenting a kind of tubercule on the surface through which passes the fæces.

The sphincter may or not be present.

3d. *Malformations in the Rectum.*—When the rectum does not descend low enough in the pelvis to meet with the anus, but terminates in some form of *cul de sac* at a variable distance from it.

When the rectum opens into a part of the surrounding viscera, viz. bladder, urethra, or vagina.

4th. Every possible variety of the preceding classes existing together.

In the *Archives Générales* for the months of May, June, and July, in the past year, is a translation of an essay by Dr. Herman Friedberg (*agrégé* to the Berlin Faculty of Medicine) on Artificial Anus. The subject is discussed at length—it is the most complete *resumé* of cases to be met with in any language; and from the high character of the author of the paper, much weight is attached to his doctrine and practice. After commenting upon the advantage of an opening in the perineum, as opposed to one in any other site, M. H. Friedberg goes on to say, that simple opening of the rectum through the perineum ought in the present day to be completely abandoned. "I do not know," says he, "a single case in which an opening by a trocar has preserved life permanently, when the closed extremity of the rectum has been distant from the normal site of the anus;" and, furthermore, he cites in corroboration of his opinion the words of M. Roser, who "has not found any detailed account, not even one which tends to show that any decided improvement has been obtained by the employment of the trocar, when the rectum has been absent a distance of one inch." The operation that he strongly contends for is that of Amussat, viz., the bringing down a gut when an opening has been made in it, and stitching it to the outlet in the perineum. In support of this he adduces two cases in which the rectum was distant one inch and a half and three inches respectively (they, however, died, the one in six, and the other in nine months); together with the four successes of Amussat, which, as Erichsen observes, singularly all occurred at Brest. Certainly, the Professor does not prove much by numbers. The advantages that he claims for it are beyond doubt good and substantial: viz. there is a mucuous membrane lining the whole tract of the canal; that the evacuations are more easily accomplished; that the natural tendency in canals not so provided to gradually contract, and finally become completely closed, is prevented; that the irritation and danger arising from the contact of effete matter with tissues not intended for such contact is also obviated. Against so formidable an array of arguments in favour of this line of conduct, the reasons that induced me, at the time when the rectum was opened, to forego even the attempt to bring it down were—that I deemed the distance, two and a quarter inches, at which it was situated from the external opening to be so great, as to preclude the possibility of so doing. Bound down as the rectum is by its fold of peritoneum, the meso-rectum, I feared to encounter the almost certain dangers of peritonitis, or pelvic cellulitis, which must inevitably be the probable consequence of the laceration of its connective tissue, to permit of its descent for such a distance. Besides, at such a depth, how great an uncertainty there must be as to what the forceps might seize hold of. A free outlet having been established, the exigencies of life were provided for, and the vital functions were, for the time, fully as well performed as they could have been, even had the gut been brought down. So far the operation consisted in one of simple puncture; and had it been intended for it to remain as such, the somewhat violent and dogmatic fiats of the two German *savans* quoted a few sentences back, would be, as I shall directly show, not absolutely justifiable. One case by Schleiss (in 1853) is narrated as successful; and up to the present hour its result has not been impugned. Another, where the rectum was absent about two and a half inches, I had the opportunity of witnessing while in Paris

last year; the case was under the care of M. Maisonneuve, and presented to the Académie de Chirurgie, also reported in the *Gazette des Hôpitaux—vide* Nos. 22 and 23, 1857. There is at present—aged some forty years—a gentleman in this town who was so operated upon, and who walks about a living monument of its success. The fact, therefore, that in certain isolated cases a fortunate issue results is certain; and it is also as certain that they are very, very much the exception to an all but universal law, that children born with imperforate anus die. To what, then, shall we attribute this result? The child is born, to all appearance healthy, save this defect; which only kills by its mechanically preventing the exit of effete matter, and its attendant consequences. It would, therefore, appear that to overcome this difficulty would be to solve the question; and doubtless such will be the result when the operative procédé shall be improved, and so in proportion will lives be saved, save in those cases where the vital powers of the child are below par (as in part evinced by the congenital deformity), and of themselves unequal to carry on life, much less when this embarrassment is added to them.

With all due deference, therefore, to the opinions of others, and in hopes that it will receive whatever of attention it may merit in their hands, I beg to lay before the opinion of my more experienced professional brethren the following modification in the operative interference usually adopted in these cases, which I had intended, had the patient survived a sufficient length of time, to carry into effect. As far as can be judged by the evidence of the published cases, death is the consequence of different causes, according as the rectum is, or is not, brought to the opening of the wound. If it is, death ensues from the injuries inflicted by so doing. If it is not, death ensues, but secondarily, in consequence of the difficulty to defecation being only partially removed. I would propose, therefore, to combine these two procédés, and endeavour to obtain, by extending the operative measures over a considerable time, immunity from the evils of both: viz., supposing, in the first instance, that an opening had been made (as was done) into the rectum, nature being relieved, had not other influences intervened, the child would have lived *pro tem.;* but then comes into consideration the subsequent difficulty in passing the stool, owing to a gradual narrowing of the passage. All this is said to be due to the mucous membrane not being continuous with the outlet.

To remedy this, therefore, when the parts have recovered from the effects of the first operation, introduce a pair of forceps, and, seizing hold of the lips of the opening into the rectum, endeavour to bring it down, not by one vigorous and decisive holding on by the forceps, and by main force bringing the gut to the external orifice, but by gently and repeatedly soliciting its descent, introducing the forceps at certain intervals, and gradually endeavouring to accomplish the end. If the rectum can be so moved from its position, and be brought lower down in the pelvis (and so by repeated attempts it has been proved) by one forcible extension, and even that sometimes crowned by success, how much more likely is it that success should attend the proceeding, when, by the almost imperceptible tractions made upon it, the great causes of failure, viz., peritonitis and pelvic cellulitis, would be removed, owing to the small amount of disturbance that would take place in the soft parts. Although, as far as I am aware, this procédé by successive stages has never before been broached in any writings on the subject, the idea was taken from a case reported in the "Lancet," vol. i. p. 493, 1846, in which an incision was made into the perineum for a distance of three inches, and on the second day an attempt was made, by gently pulling, to draw down the gut, which was not, however, fastened to the external opening. One month afterwards the child was doing well.

I am fully aware that there is a vast deal of essential difference between this procédé and the one I advocate: nevertheless, accomplishing the end by successive stages, is in this case shadowed out, and will, I trust, assume a definite status in surgery.—*Edin. Med. Journal, March*, 1858, *p.* 807.

ORGANS OF URINE AND GENERATION.

72.— ON THE TUBULAR TREATMENT OF STRICTURES OF THE URETHRA.

By Thos. H. Wakley, Esq., Surgeon to the Royal Free Hospital.

[The well-known instruments invented by the author are equally applicable to the successful and rapid management of the more simple and common forms of urethral contractions, as well as of the more severe and intractable cases which occur.]

As there may be many persons who have not had an opportunity of examining the instruments, nor, indeed, have read the paper published in November, 1856, I quote an abridged but sufficiently explanatory description of them, so as to render the remarks which will be adduced in favour of this plan of treatment intelligible:

"The instruments are composed of three guides of different sizes, eleven dilating silver tubes, and the same number of flexible tubes. The guides are numbered 1, 3, and 5.

"A guide consists of a hollow silver director, thirteen inches in length, straight, excepting near the end, which is slightly curved, the extremity being closed and rounded, and having an aperture at one side. A movable handle is fitted to it, for assisting its introduction into the bladder; when this has been effected, the handle is removed, and a steel rod of the same size, five inches in length, is fixed into the external extremity of the director by one turn of a screw. This now forms the urethral director, over which the tubes are made to pass.

"The silver tubes are nine inches in length, and straight; the opening at the vesical extremity being bevelled off, and exactly adjusted to the surface of the guides. The upper end terminates in two flanges, for being worked with the fingers and thumb.

"The flexible tubes are manufactured of gum-elastic, lined with flexible metal, and are ten and a half inches long, conical towards their points. Like the silver tubes, they glide over the guide with the greatest precision. Their upper end is furnished with a silver collar and rings, to enable their being secured in the urethra. Both the flexible and silver tubes are numbered, and work upon their corresponding guides."

The late Mr. Liston had the greatest possible objection to cutting instruments and caustics in the treatment of stricture. That celebrated operator, in his "Elements of Surgery," states that "the operation of passing a catheter is, perhaps, the most difficult in surgery." If this great master of his art made this statement from his own vast and extensive experience, surely it must be an advantage to be enabled to continue the process of dilatation without being obliged to withdraw one catheter or sound to pass a larger one, each time having a repetition of the same dangers and difficulties to surmount. Indeed, many surgeons, possessing high qualifications, are frequently doomed to disappointment from being unable after having passed one bougie, to insert even the next size. How easily this is accomplished with the guide and tubes. It is true that in the hands of the skilful and practised surgeon, the majority of so-called permanent strictures are under his control by means of "dilatation with catheters and bougies," but long time and considerable patience are required, as also very guarded manipulation. The process is necessarily slow, and is opposed by difficulties at every step.

Very considerable experience has fully proved, that in the milder forms of stricture, relief can be obtained very rapidly by means of the tubular system. This is evident, for at the first visit the treatment can be advanced to a position equal to what is gained in several interviews upon the old plan. The difference in the two systems may be explained as follows:—The treatment conducted upon the ancient plan would be to retain the largest catheter which could be introduced for an hour or so. With the tubular system that instrument forms a guide upon which the dilating tubes can be passed through the stricture with the greatest ease. Thus an action is excited which promotes the rapid absorption of the adventitious deposit causing the stricture. Some years ago, I treated a gentleman for stricture of the urethra upon the old plan. A few days since the same patient applied, telling me

he was much worse than when treated before. At the first attempt it was found impossible to pass the stricture, but on the following morning, after considerable perseverance, I succeeded in passing the smallest guide, and then dilated the stricture up to the No. 6 metallic tube, which was retained for one hour. Three days afterwards this gentleman called upon me, and I then examined him, and a number 5 was easily passed. The case was really advanced in four days equal to six weeks on the former occasion. Thus this treatment is adapted for those patients who can only make a short visit to their surgeon, as so much can be accomplished in such a short time.

The treatment can be conducted more *safely*, for when having to pass a larger instrument, this can always be accomplished by means of the instrument which has been previously passed, over which the tubes slide with unerring accuracy, and cannot by any divergence from the canal cause any dangerous consequences.

The effect upon the stricture is more *certain*, from the unlimited power of expanding the disordered portion of the canal; for after the first introduction of the guide, suited to the calibre of the contraction, whether in severe or simple cases of stricture, an instrument of such a size could be passed as would be wholly impracticable by the old system.

The permanence of the cure is more *enduring*, for a most lasting effect is produced by the rapid dilatation of the stricture, owing to the greater amount of pressure producing a corresponding degree of absorption.

The introduction of the tubes is comparatively *painless*. With some persons, the attempts of the surgeon to introduce an ordinary bougie are frequently accompanied with great pain, although a smaller instrument had been passed previously. The tubes fit the guide with such accuracy that they glide through the stricture so easily and rapidly that the patient is frequently unaware of the completion of the proceeding.

It is impossible to cause *hemorrhage*, or to make *false passages*, for owing to the mechanism and perfect manufacture of the instruments, the tube passes over the guide with certainty and precision, being insinuated through the contraction by means of a rotatory motion of the flanges of the tubes. Surely the most sceptical must allow these are inestimable advantages! Look at the hazard to the delicate lining of the urethra with the ordinary catheterism—having to withdraw one instrument previous to the introduction of another. In ninety cases out of a hundred, where false passages exist, how came they there? They have truly been designated the opprobria of surgery.

The tubes are peculiarly adapted for the *obliteration* of false passages. Many strictures occasioning but slight inconvenience to a patient, are frequently complicated with a false passage, particularly if the person himself has been making attempts to pass an instrument. It is well known that the introduction of an instrument large enough to be of service in such cases is a proceeding of extreme and frequently insurmountable difficulty. Every surgeon has been perplexed by the inclination of the catheter to enter the false passage instead of the natural canal. By means of the guide, a large-sized tube is easily passed; and thus an all-important step is gained towards healing this troublesome complication.

After the pressure, which has been applied to the contracted urethra, the delicate and sensitive lining has time to recover itself before the next discharge of urine; by this means a frequent cause of constitutional disturbances is avoided, in which may be included those distressing *rigors* to which stricture patients are particularly susceptible.

The facility with which the *bladder* can discharge its contents through the tubes is also of incalculable advantage and great comfort to the patient. Many sources of irritation may be thus obviated, which would not pass through the eye of the catheter or bougie.

[As in every thing else, so in surgery, inattention to little things is a more frequent cause of failure than inattention to greater things. In the use of the instruments recommended by the author, be careful to examine them well before use, to see that all the parts are perfect and the surfaces highly polished, that their motions may be free. Always wash them well after use.]

It is of importance to state that the numbers of the urethral guides and tubes exactly correspond with the sizes of the ordinary catheter and bougie. When a

patient applies to me, suffering from stricture of the urethra, after learning the history of his case, the urethra is examined with a No. 5 guide; if it can be introduced, the treatment of the case is conducted upon that guide. But if that cannot be passed, an attempt is made with the No. 3 guide; or, this instrument failing to penetrate the stricture, the smallest guide must be used. Whichever guide can be introduced, the first steps of the treatment are conducted by means of the tubes which have been adapted to that particular guide, and which are marked accordingly. Supposing the treatment has been commenced upon the No. 1 urethral director, silver tubes ranging to No. 5 are perhaps passed; when guide No. 3 is introduced, silver tubes to No. 6 or 7 are passed over it, when the case is completed upon the No. 5 guide, over which the larger sizes are made to pass. Thus it will be seen that this new arrangement of the instruments meets the objection which has been urged by some surgeons, that the frequent passage of the small guide in the advanced stage of treatment, risks unnecessarily the urethral lining.

After the introduction of the guide, the handle should be withdrawn, and the steel rod fixed by one turn of the screw. This now forms the urethral director. The tube which is to be used should be well moistened with either oil or glycerine, especial care being taken to drop some into the vesical end of the barrel of the tube. This can conveniently be effected by the aid of a small syringe. I nearly always use glycerine as the means of lubricating the instruments; it is soluble in urine, consequently the next stream of urine after the passage of a tube, thoroughly cleans the urethra. This is not the case with oil, which will not mix with urine: small globules cling to the mucous lining, sometimes becoming rancid and a source of irritative inflammation, frequently producing pain and discharges. Glycerine adheres more tenaciously to the tube in its passage through the stricture. This is considered of great advantage when two or more strictures have to be penetrated. Supposing the glycerine employed is pure, and of a proper specific gravity, the tubes slide along the guide more pleasantly than with oil, and afterwards are more easily cleaned. The patient being placed in the upright position against a wall, the index-rod is held in the left hand, and depressed to a point somewhat more than at right angles to the body; by this means the pendulous portion of the urethra is made straight, the guide resting upon the triangular ligament. The tube which is intended to be used is now passed over the index-rod; when it reaches the contraction, a slightly rotatory motion of the handle assists its introduction. Having dilated the stricture with the first tube, that is withdrawn, and the next size passed, and so on until the operator decides that he has effected enough at that visit. The last tube is then tied in by means of a broad india-rubber band placed around the root of the penis, the steel rod is disengaged, and the patient placed in the recumbent position. The silver tube should be retained for an hour, and then withdrawn, and the patient desired to come again in three days, when the same process should be repeated, only employing larger tubes, the completion of the cure always being conducted upon the large-sized guide. In the treatment of the milder forms of stricture, it is never necessary to use the elastic metallic tubes. The patient should be enjoined to abstain from much walking, particularly upon the day of his visit.

Having described the stricture instruments as I now employ them, and fully explained their mode of application for the relief of this distressing disease, I proceed to illustrate, with abstracts from the reports of cases, their several claims, *seriatim*, to superiority over the single catheter or bougie in the treatment of strictures of the urethra.

In the milder as well as in the more severe forms of stricture, relief can be obtained very *rapidly* by means of the tubular system. This is evident, for at the first visit the treatment can be advanced to a position equal to what is gained in several interviews upon the old plan. Many patients have been under treatment with the new instruments, who, at an earlier date, had been relieved with the common catheter or bougie. Here, then, is a direct point of comparison. The patients themselves become authorities upon the merits of the rival methods of treatment, and it affords me great satisfaction to be able to state that their verdict is invariably in favour of the new system. The following case very forcibly exhibits its advantages as to the time required for the successful treatment of strictures of the urethra:—

Mr. J. W—, aged fifty, had been suffering from strictures of the urethra for many years. He was desired to place himself under my care by Mr. Westlake, surgeon, of Surbiton. The patient presented all the symptoms of the disease in its most chronic form—continual dribbling, from inability to retain his urine, but with constant though ineffectual desire to empty the bladder. He also experienced considerable pain about the region of the kidneys, and suffered from general constitutional debility, arising from the existence of the disease. Some years since, he consulted the late Mr. Aston Key, who treated his stricture with bougies and sounds, and attended him twice a week during five months. The patient says that for several visits this eminent surgeon could not "get beyond" a No. 2 bougie; the urethra was very irritable, and he suffered considerably from the attempts made to pass instruments. When he left Mr. Key, he passed his urine in a good stream, and considered himself well. Some months afterwards symptoms of stricture again appeared, and in a comparatively short time his distressing malady returned. He then placed himself under the care of the late Mr. Callaway, and was again relieved of his complaint by the ordinary method in about six months. He now remained well for three or four years, when he perceived that the stricture was again reappearing, and he has suffered more or less ever since. He has not applied to any surgeon, but "has taken great care of his general health," and tried to keep the disease in abeyance by various medicines and "herbs" which had from time to time been recommended to him by different persons. However, lately his health had been suffering to such a degree, that surgical aid was indispensable.

On examination, I found a stricture within half an inch of the orifice, and another, tight, irregular, and cartilaginous, about five inches from the meatus. There was great irritability of the bladder and urethra. The skin of the scrotum and perineum was inflamed from the dribbling of the urine, causing the disagreeable odour which accompanies this symptom. The patient had great fear of the employment of instruments. In about twelve minutes I succeeded in passing the No. 1 guide; the handle was removed, the index-rod fixed, and No. 3 silver tube introduced completely through the strictures with great facility. This I withdrew and substituted a No. 5 silver tube, which was tied in and retained about thirty minutes, with but slight pain and annoyance resulting. It was curious to notice the change that had taken place in this patient. The involuntary resistance and uncontrollable excitement had passed away after the insertion of the first tube, and he expressed himself much pleased with the progress made. He was requested to come again in three days: upon that occasion I passed a No. 3 guide; dilatation was advanced to a No. 6, the tube being kept in the stricture about an hour. At the next visit, I repeated the introduction of the No. 3 guide, and carried the expansion of the stricture to No. 7 tube. Three days subsequently, he called again, when I found that I could introduce the No. 5 guide with great ease, and Nos. 8 and 9 silver tubes were passed through the stricture. In fourteen days he could retain his urine completely, passing it when required in a moderate stream. In one month after the commencement of the treatment, he discharged his urine in a full stream, all dribbling had ceased, the skin of the scrotum had recovered itself, and the ammoniacal smell had vanished; he had not felt the pain in the back for some days, and his general health was greatly restored.

The treatment of the stricture or strictures can be conducted with greater *safety* by the prompt method; divergence from the canal is impossible; consequently there is no chance of lacerating the delicate membrane lining the urethra. Every surgeon is acquainted with the fearful consequences which occasionally follow "breach of continuity" in this highly important structure. M. Civiale, in his work, "De l'Uretrotomie," which is intended to advocate the division of the strictured part with sharp instruments, states, with praiseworthy candour, the dangers accompanying wounds or injuries to the urethra. He places the risks in the following order:—1, hemorrhage; 2, pain; 3, irritative fever; 4, ecchymosis; 5, local inflammation and tumefaction, with or without discharge; 6, infiltration of urine; 7, false passages; 8, inflammation and abscess in different parts of the body; 9, death.

Surely the list of probable consequences from injury of the urethra, coming from this great French authority, deserves the most profound attention. It is the same whether the wound to the urethra has been caused by a sharp instrument or the

blunt point of a catheter or bougie. Every surgeon who is conversant with the treatment of stricture will indorse this opinion of M. Civiale relative to the dangerous and disastrous results which occasionally follow lesions of the highly organized and sensitive urethra. Even in the hands of the most skilful and accomplished practitioner accidents have occurred from the inefficiency of the mechanical means at his disposal with the old single catheter. These unhappy results are not isolated cases; they are not uncommon, as is clearly proved by the hemorrhage which so frequently follows the attempt of the surgeon to re-pass the catheter. The unerring accuracy with which the tubes pass over the guide obviates all chance of wounding the urethra. The bevelled end of the tube fits the guide so closely, that when the former reaches the contraction it glides through the obstruction with great readiness. The peri-urethral adventitious deposit causing the stricture is always more or less elastic, and this invariably yields to the action of the tubes; their introduction through the stricture being infallibly accomplished whether the contraction is a line or even two or three inches in extent.

Almost all authors, when writing on stricture, refer the frequent existence of false passages to the same cause—the deplorable results of the old system of catheterism. In chronic cases of stricture, where the canal has been frequently explored, we are almost certain to discover one or more false passages.

In a case of ordinary stricture, it is often found that the difficulty of introducing a catheter or sound is great enough. How much is this increased by the formation of a false passage, whose open mouth is ever ready to receive the point of any instrument which is attempted to be forced through the stricture? Disastrous as are the effects of false passages of the urethra, how infinitely worse would they be if the urine flowed *against* their mouths, and into them, instead of *over* their openings! Assuredly the time has arrived when the employment of such unsuitable and dangerous instruments should be altogether abandoned. By the tubular treatment a rapid and successful removal of the stricture can be accomplished without any chance of doing mischief. If false passages already exist, the graduated tubes will be found the most certain, safe, and effectual means of cure.

In the month of February, last year, I was requested by Mr. Reeve, surgeon, of Moreton-terrace, Kentish-town, to see a gentleman who was suffering from retention of urine, caused by a chronic and irritable stricture of many years' standing. A practitioner had attempted to pass a catheter, but had failed in consequence of the excessive hemorrhage which had followed even the most gentle manipulation. The patient said he had lost half a pint of blood from his urethra. He had long suffered from the disease, and had experienced four attacks of retention of urine, and the attempts to pass an instrument had in every instance been accompanied by profuse bleeding, and on several occasions he had fainted from loss of blood. He was lying on a sofa, with the bladder considerably distended, in great pain, much prostrated from hemorrhage, of which there was ample evidence in the room. On examination with a common No. 4 catheter, I found that after passing to about five inches and a half from the meatus urinarius the point of the instrument went readily to the right of the stricture. The extent of this passage was not ascertained. I immediately withdrew the catheter, and examined the urethra around the stricture; this did not cause bleeding. The introduction of a No. 1 guide was then attempted, carefully avoiding the bleeding false passage, and after searching gently for the orifice of the stricture for some time, the point of the instrument was insinuated into it, and passed on to the bladder, when a very large quantity of urine escaped through it, and the urgent symptoms were relieved.

In the following month this patient was again threatened with complete retention, and on seeing him with Mr. Reeve, he gave the following history of his case:—At an early age he contracted acute inflammation of the urethra, which was accompanied with profuse discharge. After different medicines had been administered without effect, and the discharge had become chronic, he was advised to consult a late eminent surgeon, who prescribed an injection of nitrate of silver, which considerably lessened the discharge, but did not stop it entirely, a thin gleety running continuing for about ten months. About this time he fancied that he was longer evacuating the contents of the bladder than formerly; and some weeks afterwards he noticed that the stream of urine was altered in shape, and

he could not complete the act of micturition in a stream, but there was always a dripping towardst the close. He imagined that he was suffering from "partial paralysis" of the bladder, and consulted a physician, who suggested the existence of stricture, but the patient would not believe that there was any mechanical impediment to the flow of urine, and did not consult any surgeon. Two years passed, and symptoms of stricture became so distressing that he sought surgical assistance. Catheterism was commenced, and he was under treatment for six months. During this period he frequently bled profusely from the urethra, and on one occasion, suffered from swelling and inflammation of the perineum, with excessive rigors, and was confined to his bed for fourteen days. He states, however, that an abscess did not form externally, although, on two or three occasions, nearly a thimbleful of bloody, thick matter passed from the urethra. He stated that at the conclusion of the treatment on that occasion the stream of urine had much improved.

Three years afterwards he again placed himself under the care of a surgeon, while suffering from almost impassable stricture. This practitioner told him that he had a false passage extending at least two inches. He was again under treatment, more or less, for thirteen months. It was at the early part of this attendance that he experienced his first attack of complete retention, following excessive hemorrhage and rigors, which were relieved by warm baths and opiates. He again recovered considerably in health, and some weeks afterwards married. Within six months he again had retention of urine, and was treated with partial improvement. He had been more or less under medical surveillance ever since the last attack. He could always tell when the point of the catheter or bougie entered the false passage, which was followed by more or less of bleeding and rigors. For some weeks previous to his last attack of retention no instrument could be introduced into his bladder. He was much emaciated and sickly-looking, and considered his case incurable.

The treatment was commenced on March 14th. After two days of preliminary preparation, I examined the urethra most carefully, and even sounds of a large size passed by their own weight into the false opening to the right and lower side of the urethra; indeed the patient himself passed a No. 8 sound into the passage, to show me "where it was and how long it extended," and considerable bleeding followed this proceeding. After failing to pass the No. 1 guide for half an hour, I then desisted from a further attempt in consequence of the extreme irritability of the urethra. On the next day I succeeded in introducing No. 1 guide without its entering the false passage; no hemorrhage. The index-rod was attached; the handle of the guide withdrawn. No. 3 silver tube, having been well lubricated both inside and out, was gently pressed beyond the false opening into the stricture, which, by a slight rotatory movement, passed over the guide to the stricture. This did not cause the loss of a drop of blood. The silver tube was withdrawn, and an elastic one of the same size substituted, which also was introduced over the guide into the bladder. The guide was then withdrawn, and the elastic tube retained in the urethra. I may confidently assert that the introduction of a No. 3 catheter through the old cartilaginous and irritable stricture by any other means than the one employed, and over the large hemorrhagic false passages which existed in this case, would have been an impossibility.

The previous history is important as affording irresistible evidence of the value of the tubular system compared with the old method of catheterism, and so much space has been occupied in its description, that I must omit the daily report of the case. However, I may state that in three weeks the stricture was quite removed, and the false passage healed. Either a No. 10, or a small sound would pass easily into the bladder, without deviating in any way from the natural course of the urethra. I saw him a few days since, and examined the urethra most carefully, and could not discover any vestige of the false passage.

Before concluding this paper I may refer to the case of a gentleman who was sent to me by Dr. Henry Bennet. In this instance, similar fortunate results followed the employment of the guides and tubes. In this case there existed a close and highly sensitive stricture, complicated with a false passage near the bulbous portion of the urethra. Unlike the former, the false passage was of comparatively recent formation, and was quite healed in seven days

from the commencement of the treatment, although the old system of catheterism had been tried for some weeks. The condition of the urethra, owing to the false passage, was so irritable, that although a No. 2 bougie had been passed several times, the manipulation necessary for the introduction of a larger instrument (which I was told invariably went into the false passage) caused such an amount of constitutional and local symptoms that the attempt was always compelled to be abandoned. In the treatment for the cure of false passages, the guide having been once introduced, the tubes must pass over the abnormal canal, and owing to the pressure employed, which could not be applied safely by any other means, the false opening becomes obliterated. In no class of stricture cases are the beneficial results of the tubular system more apparent than in those which form the subject of the present communication.—*Lancet, Jan.* 30, *Feb.* 13, *and April* 3, 1858, *pp.* 112, 162, 336.

73.—ON LITHOTRITIC INSTRUMENTS IN CASES OF ENLARGED PROSTATE.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[In patients who have stone and enlarged prostate, should it be determined to perform lithotrity, a peculiar lithotrite is necessary, the ordinary instruments being too short.]

The changes in the genito-urinary organs produced by enlargement of the prostate, and requiring the use of peculiar lithotritic instruments, may be explained in a few words. Many men who have passed the middle period of life labour under some enlargement of the prostate; and such a condition of the gland seriously interferes with the functions of the bladder; but for my present purpose it will suffice to consider the effects produced on the urethra and floor of the bladder by any considerable swelling of the prostate. A consideration of these effects will at once show in what manner the modified instruments that I employ in such cases are, of necessity, required. A constant effect of prostatic enlargement is elongation of the urethra. This lengthening of the canal may be connected with several conditions of the enlarged gland; it is, however, mainly confined to the prostatic portion of the urethra, and occurs in one of two ways. As the enlargement pushes up the neck of the bladder under the arch of the pubes, it necessarily draws up and elongates the vesical end of the urethra; or, while the gland is slowly enlarging from before backwards, that portion of the urethra which traverses it must necessarily follow the abnormal development of the prostate, and become elongated. In his recent work on the "Prostate," Mr. Thompson observes, "that in some preparations which he examined, the urethra measured three inches from the orifice of the bladder to the membranous portion, instead of an inch and a half, which is the normal length." In all cases of this kind, more especially when the middle lobe is chiefly affected, the orifice of the bladder is thrown backwards in proportion to the development of the enlarged lobe; and hence the point of any instrument used is apt to catch against the superior wall of the canal before it enters the bladder. This is an obstacle which the surgeon is very likely to meet with; and I may add, the shorter the instrument he employs, the more likely is the obstacle to occur.

The effects of the morbid growth on the cavity of the bladder also require some notice. These effects, so far as regards my present subject, will depend on the degree of prostatic enlargement, and on the lobe principally affected. When the enlargement is chiefly confined to the middle lobe of the prostate, which encroaches on the floor of the bladder, the capacity of that viscus at its lower part is proportionably diminished. I have seen a considerable part of the bladder occupied by the enlarged prostate; and, in extreme cases, preparations of which are preserved in our museums, the morbidly developed gland has occupied a great portion of the vesical cavity. In all the cases now alluded to, the effect of this extension of the middle lobe of the prostate backwards is to form a reservoir or sac behind the enlarged gland. The floor of the bladder is here greatly depressed; the urine remains as in a sac; and here a calculus may be lodged, the detection of which is often extremely difficult. I have, at the present time, under treat-

ment, a patient who has a stone concealed behind an enlarged prostate, the existence of which had escaped the notice of those surgeons by whom he had been previously examined.

The necessity of employing special sounds and catheters in cases of enlarged prostate is well known to all practitioners. The increased length of the urethra, and the encroachment of the enlarged lobe on the floor of the bladder, compel the surgeon to use a much longer catheter than usual. In prostatic enlargement, the ordinary catheter will not penetrate into the bladder; and the experienced practitioner at once suspects the existence of the complaint from this circumstance. To enter the cavity of the bladder, he takes a catheter from two to four inches longer than the one in ordinary use, and with an instrument of this kind he succeeds, after having passed it about twelve inches beyond the orifice of the urethra. The same holds good with regard to the sound. Thus the stem of the ordinary sound measures seven inches and a half; the stem of a moderately-sized prostatic sound measures nine inches and a half. An ordinary catheter, now before me, measures nine inches and three quarters to the point. A prostatic catheter measures thirteen inches and a half. From fourteen to sixteen inches is the length recommended in standard works.

In cases of enlarged prostate, then, the surgeon requires a long catheter of peculiar shape to draw off the urine. For the same reason—viz. the increased length of the urethra, and the depression in the floor of the bladder—he will require a long lithotrite of peculiar shape, in order to catch and crush the stone with ease to himself and safety to his patient.

If the long prostatic catheter be expedient, the long prostatic lithotrite is, *à fortiori*, indispensable. The necessity of employing a longer instrument than usual in such cases, will, I imagine, be generally admitted; and if I insist on it here, it is because our standard works do not allude to the point—an omission of which I have been no less guilty than others, and which I would now repair. The ordinary lithotrite of Carrière measures ten inches from the root of the stem to the eye: the cord of the curve, from the eye to the point, is one inch and three-eighths. The long lithotrite, manufactured expressly for me by Carrière, measures twelve inches in the stem, and one inch and three-eighths in the curve. The stem of Weiss's ordinary lithotrite measures nine inches; the stem of the long instrument which he has made for me measures ten inches and a half: the beak is the same length in both, about an inch and a half.

I need hardly occupy much space in dwelling on the necessity of the surgeon being provided with a long instrument of this kind, and of the many advantages which he will derive from its use. I can only say that I have had cases which, I feel convinced, I could never have conducted to a successful termination without it. It should be remembered, that with an elongated urethra, the distance between the external and internal orifices of the canal is increased by at least an inch. The enlarged prostate, again, occupies the front part of the floor of the bladder, on which it encroaches another inch or more. The calculus lies concealed in a sort of pouch behind the enlarged lobe, which rises like a barrier before it. Under these circumstances, it is evident that the surgeon will require an instrument longer than that in ordinary use by two or three inches; the common lithotrite will either not pass into the cavity of the bladder, or, if it does, after having been forced up to the handle, the motion of its curved part will still be greatly impeded by the prostate.

In some of my cases the common instruments were not sufficiently long, and it became necessary to push them up to the shoulder before I could turn the point in the necessary direction. With the long lithotrite, on the other hand, the surgeon gets readily into the bladder; but to overcome the impediments likely to arise from an enlarged middle lobe, a peculiarly formed beak is necessary, and the pelvis must be raised.

The beak or curved part of the lithotrite must be short, and the curve sharp. With an instrument of this kind, the surgeon will often be able to "fish up the stone from the depression behind the enlarged prostate," in the manner described in the last edition of my work on the 'Bladder.' By turning the point down, and elevating the handle of the instrument, the stone will commonly be found in the position already mentioned. When the middle lobe of the prostate is much

enlarged, and extends some way into the bladder, the point of the instrument cannot be turned downwards in such a way as to reach the stone. The plan from which I have derived most benefit in such cases, is that of raising the pelvis of the patient in such a way that the calculus shall be displaced towards the posterior wall of the bladder. Especial care must be taken that the pelvis itself is raised, and not merely the lower extremities. By adopting this plan, I have, on several occasions, immediately caught the calculi, which lay concealed behind the prostate as long as the patient retained the ordinary position. Every lithotrity couch should be provided with some mechanical contrivance for executing this proceeding quickly. The sufferings occasioned by the attempt to seize a stone behind an enlarged prostate, in the ordinary way, and after strong elevation of the handle, are often of the most distressing kind, and cannot certainly contribute to the well-doing of the patient. On the other hand, the ease with which the reversed beak falls on the stone is remarkable; but the manipulation requires a cautious and practised hand.—*Lancet, Jan.* 30, 1858, *p.* 110.

74.—ON THE PATHOLOGY AND TREATMENT OF ENLARGED PROSTATE.

By Henry Thompson, Esq., London.

[The influence of iodine and bromine over certain enlargements of the uterus is undoubted, and as there seems to be a certain analogy between uterine and prostatic enlargements, we may hope that these agents will prove to have some remedial powers over the latter disease also.]

The following observations are so good, that we extract them:—

"I am of opinion, then, that it is certainly worth while to attempt the reduction of enlarged prostate, especially if it be an example which is ascertained to constitute a pretty uniform tumour in the rectum. If the patient enjoys a fair share of health, there is nothing to contra-indicate it; the treatment may be pursued without exhausting the constitution, or deranging the digestive functions.

"The plan which I have pursued in a few cases is the following:—

"Tepid hip-baths, daily, of water to which the bittern or mother-lye of the Kreuznach springs has been added, in varied proportions, beginning with half a pint, or pound, according to the form in which it is obtained (see note below *),

* "The principal spring at Kreuznach employed for medical purposes is the Elizabeth-Quelle. Its temperature is 54° Fahr., and it contains about 90 grains of solids in the 16 ounces with about 5 cubic inches of carbonic acid gas.

"The following is one of the most recent analyses, by Bauer: —

Chloride of sodium	72·92
" potassium	0·97
" magnesium	0·25
" calcium	12·98
Carbonate of magnesia	1·57
" lime	0·27
" iron	0·20
Bromide of sodium	0·30
Minute quantities of iodine, manganese, and some earthy bases with chlorine	1·47
	90·98 grs. in 16 ozs.

In this form it is administered internally in small quantities.

"But for topical applications, the water of this spring is strengthened in saline constituents by the addition of the mother-lye after the elimination of the chloride of sodium at the Salt Works, which exist on a very large scale close by the town, at other saline springs. This mother-lye, of which the specific gravity is between 1·3 and 1·4, contains no less than between 2000 and 3000 grains of solids in 16 ounces. A late analysis gave the following result:—

"In 16 ounces of the mother-lye there were 2484·16 grains of salts, constituting about a third part of the mixture.

Chloride of calcium	1789·97
" sodium	226·87
" potassium	168·81
" magnesium	230·61
" aluminium	1·56
" lithium	7·95
Bromide of sodium	59·14
Iodide of sodium	0·05
	2484·16 grains.

"This fluid being evaporated, the saline matters have for some time past been imported to this country

to four gallons of plain water, at a temperature of 90° to 94°, or warmer, if preferred; in this the patient should be seated for twenty minutes every morning.

"Local application may be made either by enema or suppository; if by the former method, the following formula may be depended upon as not too irritating to the rectum. It should be retained there as long as the patient can conveniently do so. The best instrument for injecting it is an india-rubber bottle with ivory tube, as the constituents of the Kreuznach water will rapidly injure metallic apparatus.

R. Potass. iodidi, gr. v. Kreuznacher bittern, ʒ ij.; dec. hordei vel lini, ʒ iij. Misce pro enema, quotidie utendum.

"To this a little opium may be added if necessary, in order to enable the bowel to retain it.

"The suppository, which, on the whole, is perhaps more easily administered and borne than the enema, may be used after the following form:—

R. Potass. iodidi, gr. ii.—v., vel, potass. iodidi, potass. bromidi, āā, gr. ii.—iii.; cerati, gr. viii. Misce, fiat suppositorium.

"This should be employed at the time of going to bed, and may be repeated every night for a considerable period.

"Kreuznach water itself, from the Elizabeth-Quelle, is not obtainable in this country, but is probably less useful than the bromide and iodide of potassium, given internally. I must confess I am disposed to believe less in the value of internal remedies than in that of the topical means described. At most, I would employ only small doses of the bromide and iodide of potassium conjoined, in some suitable vehicle; these are more likely to be useful, and are much better borne by the stomach than the natural water, with its large proportion of chloride of sodium. From three up to ten grains of the bromide with, at most, one of the iodide, twice a day, is the quantity I have employed. It is scarcely necessary to say that this course must be persevered in for a considerable period of time, during which the dose may be gradually increased.

"Of the application of these irritants in any form or degree to the surface of the sensitive mucous membrane of the urethra I wholly disapprove. Nothing is easier than to pass down the prostatic part a small portion of ointment impregnated with some chemical agent, and project it into the urethra there. But that it can remain there in any quantity, or for any time, adequate to the absorption of a part of the salt introduced, I do not believe: the greater part, if not the whole, is speedily removed to the bladder, and the utmost which can be expected to result is an amount of irritation correspoding to the quantity of the agent employed, an effect which, in any degree, is positively injurious.

"Now, although I think we may by perseverance in this line of treatment, aided by those other appliances, and by an appropriate regimen, which are necessary, and have been already described, attain some improvement in the condition of the prostate, or, perhaps, be able to retard its increase, I do not think we are warranted in expecting to reduce the bulk of a considerably enlarged prostate of long standing by the means described. They are, however, simple, easily employed, and unattended with any danger to the patient; and they certainly hold out more promise than any other therapeutic agents with which we are acquainted. They can be tried by the patient himself for a considerable period of time (and without perseverance for some few months it would not be desirable to commence their use), with but the occasional superintendence of his medical attendant, when once instructed at the outset. All the advantages which the natural springs possess are now attainable at home, since the treatment, mainly consisting as it does of external applications, is pursued with precisely the same elements as at Kreuznach, in no respect altered by their transmission here; while for internal remedies, the artificial product of the chemist is preferable to the crude salt water of the native springs.

"Under these circumstances I am induced to conclude that we shall act judiciously in advising most patients whose health is good, and in whom the

for medicinal use; but the result is considered somewhat inferior as a therapeutic agent both here and at Kreuznach, to the original mother-lye, while it is certainly somewhat less convenient for use. More recently this has been imported by Messrs. Schacht, of 38, Houndsditch: from whom my patients have obtained it in any quantity required, at a very reasonable rate.

complaint is not considerably advanced, to make trial of the treatment in question."

It will be observed that Mr. Thompson only speaks of the effects of this treatment conjecturally. He does not seem to have tried it, but it is certainly worth trial. Our own experience teaches us to believe more in the value of the bromide of potassium administered internally than Mr. Thompson appears to do by the above passage. We have long been in the habit of giving it and the muriated tincture of iron alternately week by week—a week of the bromide and a week of the iron—for several months, and have no doubt whatever that enlarged prostates have diminished very considerably in size under the course. The dose has been from half a drachm to a drachm of the bromide daily, and the same quantity of the iron tincture.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 40.

75.—*Galvanism in Incontinence of Urine.*—Mr. Simon has recently been treating some cases of incontinence of urine in children by means of galvanism, the current being conveyed by the aid of a catheter in the bladder. The result in two or three well-marked cases has been quite satisfactory. The cases selected for it must, of course, be those of true incontinence from atony, and not of irritable bladder from urinary causes.—*Medical Times and Gazette, Nov.* 14, 1857, *p.* 404.

76.—*Epithelioma of the Prepuce, Spreading to the Glans.*—It is of great practical importance to distinguish between two forms of cancer of the penis, for the reason that in the removal of one of them the patient *may be* altogether exempt from a recurrence of the disease, a matter not to be disregarded in the prognosis. Many patients have had the organ removed for cancer, which has not returned, most certainly, for many years. An instance of the kind is at present in University College Hospital, wherein the penis was removed six years ago, without the recurrence of the disease.

The two forms of cancer, then, which affect the penis are these: one is epithelioma, or epithelial cancer, which attacks the prepuce; the other is true scirrhus, which involves the penis itself. On careful examination of the cases which remain exempt for many years, they turn out to be epithelioma. On the other hand, when recurrence does early take place, the scirrhous form has been present. These distinctions were particularly insisted on by Mr. Erichsen, on the 2d of December, when a case of epithelioma affecting the entire prepuce, and encircling the glans penis like a collar, was submitted to the operation of removal. The disease had spread to the glans, having commenced in the prepuce, and had assumed considerable dimensions, of a fungous character. The man's general health was good, and no glands of the groin were affected. He had had a congenital phymosis, which he had slit up himself some years ago. Amputation of the organ was performed by Mr. Erichsen, with the removal of a good portion of penile integument, to prevent undue retraction of the stump within it. The section of the diseased mass showed the disease to be confined almost solely to the prepuce, but the septum between the corpora cavernosa and spongiosum was certainly thicker than natural, but we can hardly suppose it to be the result of the disease.—*Lancet, Jan.* 2, 1858, *p.* 12.

DISEASES OF THE SKIN.

77.—ON IDIOPATHIC ERYSIPELAS, WITH REMARKS ON THE OLDEN AND THE MODERN TREATMENT OF THE DISEASE.

By Dr. Joseph Hall, late Physician to the Glasgow Royal Infirmary.

[The supervention of delirium in the course of erysipelas always demands the free use of stimulants. Dr. Todd remarks on this subject:]

"Sometimes," he remarks, "in the course of an attack of erysipelas, the patient may become delirious, or he may fall into a state of coma. When this occurs, some authors would tell you that the erysipelas is inducing inflammation of the membranes of the brain. These notions are now almost entirely exploded, and there is ample evidence that, if death takes place while the patient is in either of these conditions, the cerebral meninges are found, upon post-mortem examinations, to all appearance perfectly healthy; or if there be anything amiss with them, it is that the vessels of the pia-mater contain rather less blood than they ought to do, and that none of the products of an inflammatory process can be detected. It is during the first fourteen days of the illness that these formidable symptoms are most apt to occur. Hence the necessity of beginning early, from the first, with the supporting and stimulating treatment, which you will find a preventive both of delirium and coma. The lower you keep your patient, the greater will be the tendency to delirium and coma, and the more violent or profound will either be; and the development of either is an indication for pressing that treatment in the same or greater doses. . . . . In those cases in which the disease responds to the stimulating treatment, the delirium subsides and speedily altogether disappears —the redness and swelling diminish—the pulse becomes softer, fuller, and less frequent—the fever decreases, and the state of convalescence is rapidly established."

[With this the author's own experience entirely coincides. He relates eleven cases of erysipelas, which may be divided into three classes:—1. Mild; 2. Severe; 3. Very severe.]

The treatment in all was of a supporting and stimulating character. In the milder cases, either no wine was used, or the quantity was small. In the more severe instances, though some of the patients might have recovered without wine, yet a comparison of the increasing exhaustion which preceded, and the rapid improvement that followed its use, forces me to the conclusion, that the favourable progress was chiefly owing to its influence. In the very severe cases I feel convinced, that had stimulants not been freely employed, the patients would not have recovered.

It is about thirteen years since I commenced to employ stimulants in the treatment of erysipelas. I may remark that both this plan of treatment, and the circumstances demanding it, were almost unknown to me when I came to reside in Glasgow. In the country, I have found it necessary on more than one occasion, to bleed both locally and generally, and with a very beneficial result. Even in milder instances, purgatives, diuretics, and diaphoretics, were always freely employed with advantage; whilst, in the more severe attacks, leeches to the nape of the neck, moderate general bleeding—puncturing the inflamed integument with the point of the lancet—proved most salutary remedies. In a few words, the treatment was antiphlogistic in the severe cases, moderately so in the milder instances, and supporting, in cases complicated with either old age, infirmity, or typhus, &c.

The last case in which I employed bloodletting occurred to me shortly after I came to reside in town. I was called to see a stout-looking man, labouring under a severe attack of erysipelas of face and head. The integuments were immoderately swollen, red, and exceedingly painful. He also complained of severe headache. He was sleepless; pulse full and frequent. His bowels had been freely moved by a purgative before my visit. I bled him from the arm to twelve ounces, and punctured the integuments of the forehead with the point of the lancet, as recommended many years ago by Dr. Dobson. About eighteen hours after this, I was again desired to see him, in consequence of his having become delirious. I found him exceedingly weak; face livid; pulse extremely feeble and fluttering. He lay on his back, with his mouth partially open, and muttered occasionally a few unconnected words. I immediately ordered him a wineglassful of whiskey, and remained to observe the effect. This was so beneficial at the end of an hour, that I gave him half the quantity, and left directions that he should have a glass of wine every four hours. Next day he was greatly improved; the wine was reduced to a glass every six hours. The patient recovered.

My next patient was a girl, aged 17 years, of a weakly habit; she had never menstruated. The erysipelas was severe, extending not only over head and face, but spreading down the neck and greater part of chest and upper extremities. I

did not venture to order this patient any reducing remedies. At first she had plenty of beef-tea, and at the end of the week she was ordered wine in moderate quantities, the effect of which was very beneficial. In every other instance of the disease which I have had since under my care, the treatment has been more or less of a tonic and stimulating character.

Though I have reason to believe that the great majority of the medical men of this city have been employing a similar line of treatment during several years past, yet there are probably few who have made the same rapid transition from the antiphlogistic to the stimulating plan. This change of practice did not arise either from any defect of the former method, or from any new opinions regarding the pathology of the disease, but entirely in consequence of the patients whom I have seen in Glasgow being incapable, not merely of bearing active measures, but positively requiring the aid of stimulants. I was the more easily induced to adopt the use of wine, from having read a most excellent paper on the subject by the late Dr. Robert Williams, from whose work I have already quoted two cases. This valuable contribution was first published in the Reports of St. Thomas's Hospital for the year 1836, and afterwards incorporated into his work on Morbid Poisons. The profession is indebted to this philosophic physician for having introduced, at least in modern times, the stimulating treatment of idiopathic erysipelas. He was led to adopt this plan from theoretical considerations. Erysipelas, he conceived, depended on the presence of specific poison in the blood, the cutaneous affection being the mere local manifestation of the malady. The disease, he believed, was thus allied to typhus and similar diseases. He, consequently, inferred that the same supporting plan of treatment was demanded.

Other physicians attached to the London hospitals adopted the treatment, and have expressed the strongest opinions regarding its efficacy. No one has done so more frequently, forcibly, or ably, than that most distinguished physiologist and clinical physician, Dr. R. B. Todd. In the excellent lecture from which I have already quoted, he states that—

"The treatment for erysipelas which I have for many years past adopted is the stimulating and supporting plan; and this I would, from a long experience, recommend to you, under the conviction that it is the best adapted to save life, check the progress of the disease, and that under it you will seldom have to deal with the secondary phenomena of the malady. . . . The upshot of all I have to tell with respect to the treatment of erysipelas is, to give stimulants and nourishing food freely, and from the very commencement of the attack. . . . Now, of all the stimulants, I believe, as I have already said, the alcoholic are the best; and I have witnessed such remarkable effects, in such a variety of cases, produced by their free exhibition, that I am inclined to consider them as *antidotes* to the erysipelatous poison; and if I were restricted to any one remedy in the treatment of this disease, I should assuredly choose brandy."

The same stimulating and tonic plan of treatment is employed by every physician and surgeon of note in London. In Edinburgh we find the same tendency to place confidence in tonics and stimulants. For instance, the use of the muriated tincture of iron, introduced by Dr. G. H. Bell, and since so universally employed not only in the northern metropolis, but throughout the country.

In Glasgow, whilst I believe that the great majority of practitioners employ the same method, yet I am aware that we have still a few adherents to the doctrine of *depraved secretions*, and who denounce the poor, innocent liver as the fountain of all the evil, and load the patient with blue pills, and drench him with aperients.

The results of my own personal experience, and the quotations which I have made from recent writers on the subject, I think, justify the two following conclusions: 1st, That the stimulating treatment of erysipelas is the plan generally adopted at the present day. 2d, That the results which have followed its employment establish its correctness.

It is not contended, however, that stimulants will prove infallible; but I affirm that when they fail, nothing else will succeed. The disease sometimes presents itself in a most formidable form; indeed, without impropriety, it might be denominated malignant. I have seen two cases of this description—one in the practice of the late Dr. Moffat of this city, and the other was a patient of Dr. Lyon. In

both instances stimulants proved useless. The one patient died on the tenth, and the other on the eighth day. In these cases, great depression of strength, a soft, irregular pulse, were prominent symptoms from the first. The countenance had a bloated appearance; the colour of the skin was dingy from the commencement, but became livid as the disease progressed. The cerebral functions soon became disturbed. The patients became comatose and rapidly sank. Such cases have been described by several writers, under the specific name of Œdematodes, especially by Willan, Bateman, Pearson, &c. They correspond with the fifth class of Dr. Todd. I repeat that whilst, in such intense effects of the morbid poison, stimulants may prove powerless, yet their free administration is the best antidote which we have in our power to employ.

Though it should be argued that I have placed too much weight on the share which the stimulants had in promoting recovery in the other cases, yet no one will contend that the employment of antiphlogistic treatment would have proved as successful.

It appears to me that there are only two ways in which the type of erysipelas can be modified. (*a.*) The intensity of the exciting cause. (*b.*) The constitution of the patient.

(*a.*) Erysipelas, like other maladies of the same class, arises from a morbid poison, either generated within the body or absorbed from without. The amount and intensity of this poison will certainly modify the type of each case. This fact, to some extent at least, would afford an explanation of the change under discussion. But, unfortunately, we have no means of demonstrating that this morbid poison has increased in malignancy, except the modification of the symptoms, which are its effects.

(*b.*) If the above supposition be erroneous, then we are driven to the conclusion that the human constitution must have undergone some process of deterioration, by which our patients are rendered less able to resist the influence of morbid agencies. Some writers settle this question in a very summary manner, by appealing to the heroic deeds of our soldiers at Alma, Balaklava, Inkerman—and, we add, their glorious victories achieved on the burning plains of Hindostan, under their gallant leaders, Neill, Havelock, Nicholson, Campbell, and a host of others equally brave and distinguished. These, certainly, are deeds of valour, exertions as intense as those which characterized our armies under the Black Prince in bygone days, or under Clive a century ago, or under Wellington in more modern times. Whilst our hearts throb with exultation, as we contemplate such magnificent manifestations of the physical energies of "Britain's warriors," yet such glorious and unsurpassed exhibitions furnish no evidence, yield no proof, that a deterioration has not taken place in the constitutional powers of the general community, rendering its members less able to resist the cause of disease.

We must not forget that soldiers are selected men, and are disciplined into the capability of undergoing protracted and powerful exertion; therefore their power of enduring fatigue forms no criterion from which an opinion can be deduced regarding the condition of the general mass of the people. When we look at the state of the inhabitants of our large cities, we find in operation many new and potent agencies by which the constitutional powers of these people are rendered much less able to resist morbid forces. Accumulations of filth, bad water, overcrowding, defective ventilation, adulterated and unwholesome food, unhealthy occupations, luxurious living, intemperate habits, and moral contaminations of every character, have all been rapidly on the increase during the last thirty years. A very brief consideration will convince us, that though people living under such influences may enjoy a tolerable amount of health in ordinary circumstances, yet, if subjected to any unusual force, whether endemic or epidemic, they will be much less able to resist the depressing influence than if they had been placed under more favourable sanitary conditions.

The history of all epidemics corroborates these views. Is it not the weakly, the ill-fed, badly-lodged, and the intemperate who suffer most severely during the prevalence of such maladies? Do not typhus and cholera ravage our cities, and leave the rural districts almost scatheless? That man must have been totally unobservant of the changes through which society has been passing during the last thirty years, who will deny that debilitating agencies have been increasing to

an extent unparalleled in the history of this part of the world. These circumstances I contend are not mere speculations; they are existing realities; and their effect in impairing the human constitution cannot be questioned.

The above considerations, I consider, render it highly probable that the change which, of late years, has been manifested in the type of disease, has arisen principally from the reduced stamina of the patient. At all events, it is a sophism to bring forward the prowess of our armies as an objection to this view. Such a mode of reasoning may be patriotic and plausible, but it is very illogical.

At first sight it may appear to be of no real moment whether we adopt the view that the change in type is owing to the state of constitution, or that it arises from an increased intensity of the peculiar morbid poison which excites the disease. I think that we should not hastily adopt the latter opinion, because this modification of the exciting cause is beyond our powers of control. In consequence of the impenetrable darkness with which such morbid agents are surrounded, we are not likely to discover any means by which their malignancy can be mitigated. Under these circumstances, if we believe in the increased-intensity doctrine, we shall in all probability fall into mere speculations regarding certain cycles through which these morbid poisons revolve, being more potent during one series of years than another. Indeed, we find that some writers have already announced such opinions, and hesitate not to predict that, sooner or later, we shall have a return to a sthenic type. Without denying the possibility of such an occurrence, I beg to repeat that, in the meantime, we should admit such doctrines with great caution; because we may be induced to withdraw our attention from the more important and more practical point, namely, the deteriorated state of the constitution of the patient; and in this way a check would be given to determined and persevering efforts to remove the causes by which this impairment of the general health of the community is produced.

Another objection—at first sight a rather formidable one—may be brought against the views which I have advocated. It may be said that, as the duration of life has increased rather than diminished during the last half century, therefore, no degradation of the human constitution can have taken place. A little consideration will show that this objection is illogical.

In the first place, we cannot rely on the accuracy of the mortality returns that were made fifty years ago.

Secondly, Though the average value of life has increased, yet between particular localities marked differences exist. From undoubted returns which have been made by the Registrar-General, we find that the inhabitants of London would in a few years become extinct, if it were not owing to the influx from the other parts of England. The same remark will apply to our own large city. Again, we are informed by the returns of the Registrar-General, that the deaths nearly double in large towns the mortality in country districts. To what cause or causes are we to attribute this amazing disparity? Is it not to the very contaminating influences which I have enumerated?

But thirdly, it must be kept in mind that I am not contending for a deterioration that shortens the period of human existence, but simply for an impairment of vigour, which offers less resisting power to the depressing effects of morbific agents. I believe that patients labouring under asthenic disease, if properly treated, have at least as good a chance of recovery as those who are subjected to sthenic attacks. The duration of life, however, has nothing whatever to do with the present subject; it forms a totally different question. It is an obvious fallacy to argue, that the *increased value of life* disproves *a feebler state of constitution*. I merely contend for a deterioration, the existence of which, it will be easy to show, must be admitted by these very objectors. Let me ask an explanation of the following circumstances:—Take two men, A and B. Both are exposed to the poison of small-pox. A has a robust constitution, and the disease presents sthenic characters, and will not demand a stimulating treatment. B, on the other hand, has a feeble constitution; and we find his case to be of an asthenic type. He will require support, and even stimulation. It will be readily conceded, that the *difference between the constitutions of these two men is the correct explanation of the dissimilarity in the type of the two cases.*

Let us expand the argument a little. Suppose that out of 100 patients seized

with typhus, 20 have a strong and 80 a weak constitution—the former will present examples of a sthenic, and the latter of an asthenic type. The explanation will be the same as in the individual instances of A and B. Let us next extend the argument to the facts of the case under discussion. Forty years ago we find that, in a large majority of the patients attacked with erysipelas, the disease was of a sthenic character, and was treated successfully by antiphlogistics. We also know that, at the present day, the disease generally presents itself in an asthenic form, requiring the use of stimulants. From these circumstances we are as much justified to conclude that this change of type has resulted from constitutional differences between the two classes of patients, as we are to draw the same inference either in the cases of A and B, or of the 100 patients. That which explains the difference between the types of the disease among our own patients must also apply to the difference between the type of the disease that existed forty years ago, and that which we meet with at the present day. To make this still more forcible, let us throw the argument into the following syllogisms:

(*a.*) Patients of a robust constitution have diseases of a sthenic type.
Thirty years ago disease was of a sthenic type;
Therefore, the patients thirty years ago had a robust constitution.

(*b.*) In patients of a feeble constitution disease assumes an asthenic type;
At the present day disease is of an asthenic type;
Therefore, patients at the present day have feeble constitutions.

In conclusion, I beg to observe, that though the morbid poisons from which erysipelas and other allied diseases originate, be beyond our control, yet we have it in our power to remove those causes which tend to prepare the people for the action of these poisons—causes which unquestionably render communities much more liable to become the victims of such diseased influences.

By improving the sanitary condition of our cities, large towns, and villages—by reforming our personal, domestic, and social habits, we shall most effectually diminish the power of morbific agents.

It must, therefore, be obvious, that the views which I have brought forward regarding the cause of the change of type lead to important practical results. It seems to me that the present asthenic character, not only of erysipelas, but of other diseases, whether specific or not, furnishes the most powerful argument which the sanitary reformer can bring forward, to urge upon the public mind the necessity of hygienic measures, and thereby to secure the community from the baneful effects of the contaminating influences by which we are surrounded.

The disuse of the "*lancet*"—a theme of complacent boasting with some—we see has not arisen from the more correct teachings of modern medical philosophy, but from the diminished tone of the constitutional powers of the patient. Instead either of denouncing the heroic treatment of our predecessors, or of lauding the milder practice of our own times, we should rather lament the existence of causes, by which sthenic diseases requiring heroics have become the exception, and that asthenic affections, demanding stimulants, have become the rule. We perceive that the difference between the respective plans of treatment holds an intimate relation to the dissimilarity of type. We can claim no credit for the superiority of modern practice. It has not arisen either from the advancement of science, or from our superior wisdom, but from the change that has taken place in the type of disease. At one period, doubtless, heroic remedies, especially bleeding, were used by medical men indiscriminately and lavishly; but this was mere abuse, and does not authorize either the total condemnation or abolition of all active treatment.

We must take care to avoid the opposite error of our predecessors. We must beware lest we fall into the habit of treating all cases as asthenic, and neglect to discriminate those instances in which antiphlogistics should still be preferred to stimulants. Such cases, though exceptional in towns, yet I believe vastly predominate in agricultural districts, and demand, even at the present day, the active treatment generally adopted in by-gone times. In all ages, routine has been the bane of medical practice, and will continue to be so, so long as we remain indolent, lethargic, and unreflecting. Surely it is our duty to use every effort in our power, to destroy the supremacy of a system so degrading to our profession, and so disastrous to humanity.

From the facts and reasonings which I have brought forward in the foregoing pages, the following conclusions may be deduced:—

1. That erysipelas, at the present day, requires a tonic and stimulating treatment.

2. That the antiphlogistic treatment employed by medical men at a former period was then justified.

3. That the type of the disease has undergone such an important change as to demand this alteration in the treatment.

4. That the change of type depends principally, if not wholly, on a deteriorated condition of the constitutional powers of the inhabitants of large cities, towns, and populous villages.

5. That the causes of this loss of tone in the human constitution are either capable of complete removal, or, at least, of very important amelioration.—*Glasgow Med. Journal, April*, 1858, *p.* 27.

78.—ON THE TREATMENT OF ERYSIPELAS.

By Peter Hinckes Bird, Esq., Author of the Jacksonian Prize Essay on Erysipelas.

The treatment of erysipelas may be divided into *preventive* and *curative*. The former will include all means which tend to obviate the causes, and prevent the extension, of erysipelas and its allied diseases, the prevalence of which forms a test of the sanitary arrangements of hospitals; in which institutions, unfavourable locality, dampness of the surrounding soil, imperfect drainage, choked sewers, deficient ventilation, uncleanliness, and over crowding, concur for the production and spread of these diffuse inflammations. Hospitals should have large and airy wards for the patients to feed, exercise, and amuse themselves; the floors should be dry rubbed and polished, not washed, for damp favours miasmata; and every precaution should be taken against fomites and infection, by the closing and fumigation of infected wards, the total destruction of all dressings and bandages used, and the substitution of tow, &c., for sponges in the dressing of wounds. Charcoal, hung around the bed in coarse muslin bags and trays of the same placed by the bedside, is well worthy of trial.

Having so fully proved the alliance existing between erysipelas and puerperal fever, no practitioner can be sufficiently cautious in going from a case of this disease to a woman in the parturient or puerperal state; the annals of medicine contain fearful and heart-rending evidence of the mortality caused by inattention to this most important fact.

The profession is not now "quite at a loss to discover in this affection those marks of debility which some have so much insisted upon," but believing it to be a disease of debility, that is occurring in an enfeebled constitution, almost universally treat it by stimulants and by the free and steady administration of nourishment: frequent and large doses of brandy, beef tea, quinine, ammonia, chloric ether, &c., should be given, and attention paid more to the state of the pulse, than to that of the secretions. In rural districts, among a hardy and robust population, a more marked inflammatory form will be benefited by purgatives, and slight but not too lowering antiphlogistics; and an intermediate class of cases will require some modification of treatment; each case presenting its own peculiarities and indications on which the necessity, and the proper time for the administration of stimulants must depend.

Opiates must be given with great caution—they are contra-indicated in cerebral congestion and coma; in one case of this kind, death so rapidly followed their administration as to appear to be the cause of the unfortunate event—in these cases the milder preparation of hyoscyamus is to be preferred; but to lessen pain and irritation, tranquillize the system, and procure sleep, they are of much service in the latter stages and more severe forms of the disease. For this, they should be given in sufficiently large doses to produce the desired effect, small doses only adding to the febrile excitement, and rendering the head more liable to become affected. In cases attended with violent delirium, I have seen the hydrochlorate and acetate of morphia, in grain doses, produce a most beneficially effect.

In desperate cases, with intense coma, and typhoid symptoms, turpentine has produced good results; its purgative action should be decided, otherwise it is apt to cause unpleasant head symptoms; it should be given in doses of ʒ ij. to ʒ iv., with one-half or two-thirds the quantity of castor-oil.

When diffuse inflammation is spreading down the larynx and trachea, tracheotomy is imperatively called for; indeed it is the only means, combined with the free administration of stimulants, which offers any chance of success.

The experience I have had of the new vaunted remedy, tincture of the sesquichloride of iron, is not at all in its favour when compared with alcoholic stimulants, to which it may in some cases be a useful adjunct. It is especially indicated in albuminuria coincident with, or consequent on general erysipelas, of which I have met with three cases.

Cases of chronic erysipelas are very difficult to cure; the local symptoms never altogether disappear, and are apt to become aggravated at short intervals on the least irregularity of diet or from external impressions, and often without any evident cause. In these cases the functions of the stomach and liver are often disordered, and the secretions consequently vitiated; these conditions must be rectified by a course of alteratives, aperients, and tonics—such as iodide of potassium, alkalies, and sarsaparilla, preparations of zinc and iron.

With regard to local treatment, I am not aware of any that will cut short the disease; in the uncomplicated variety, collodion, or gutta percha dissolved in benzule, forms an elegant remedy: and in uncomplicated erysipelas of the face, punctures relieve the distension; but the most agreeable application will be found to be that of lard and cotton wool, after relaxing the skin by warm fomentations. In uncomplicated erysipelas of the extremities, a perfect line of nitrate of silver, at least three inches above the line of disease, in nine cases out of eleven proved a sure barrier. Where an interstice has been left, I have seen it creep through, and spread.

In the variety complicated with diffuse inflammation of the cellular tissue, the early use of small incisions when the skin is hard, tense, and resisting, and the ain severe and throbbing, is much to be recommended; the grand object of these should be the prevention, rather than the removal, of the effects of inflammation; or in other words, they should give exit to blood and serum, rather than pus and sloughs.

From all I have seen and read of this disease, I can discover no argument for delaying, but many for immediately resorting to them; by thus acting, and combining frequent syringing with tepid water, and repetitions of incisions if necessary, we may be truly "at a loss to name a more valuable accession to the art, of modern date, than that for which the profession stands indebted to Mr. Copeland Hutchinson." M. Chassaignac, of the Hôpital Lariboisiere, drains off the matter by means of India rubber tubes, perforated at various parts of their length, so as to facilitate the flow of the discharge along them.

In chronic erysipelas, a solution of the nitrate of silver should be frequently applied, or small blisters at short intervals at a little distance from the affected part; occasionally, when these fail, an issue in the arms effects a cure.

To conclude, then, erysipelas is merely an example on the skin of that diffuse inflammation, which in other tissues constitutes diffuse inflammation of the mucous membrane, diffuse phlebitis, puerperal fever—all of which have a common origin, a poison in the blood, are infectious and contagious, and may mutually produce each other.

The term erysipelas should be confined to diffuse inflammation of the skin and subcutaneous cellular tissue.

Erysipelas is best treated by stimulants and support, and when complicated with inflammation of the subcutaneous cellular tissue, by early incisions which should extend to the depth of the disease.—Midland Quarterly Journal, Vol. I, p. 13.

79.—ON SOME AFFECTIONS OF LYMPHATIC GLANDS.

By James Paget, Esq., F.R.S., Assistant-Surgeon to St. Bartholomew's Hospital.

A form of Acute Inflammation of Lymphatic Glands often occurs, in which

all the glands of a cluster appear to coalesce in one swelling, involving both themselves and the tissues between and about them, and accompanied with uniform induration, heat, and pain. The local cause of the disease is seldom evident; it is most frequent in those who are enfeebled by previous illness, or by defective food; its most usual seat is in the glands below the angle and base of the jaw, or in those behind and beneath the upper part of the mastoid muscle. In the former situation, the glands swell out to the level of the jaw, or beyond it, and may feel as if adherent to it; in the latter, being bound down by the tough fascia, they are less prominent; but, in both places, they make swellings of remarkable hardness, with a nearly uniform flattish presenting surface. The integuments over them are usually somewhat œdematous, but not reddened in proportion to the severity of the deeper inflammation.

In the progress of the disease, which is usually accompanied by sharp inflammatory fever, it is common to find one or two small suppurations, as if one gland in the cluster had suppurated, while the rest remained swollen and hard. The finger passing over the diseased part sinks in as it passes on some yielding spot; there is no distinct fluctuation, but a circumscribed softness.

It will be found, I believe, an excellent rule to puncture this soft place as soon as ever it is detected. Usually, after such an opening, the pain is quickly relieved, and the rest of the swelling gradually subsides, without any extension of the suppuration. The opening may be small (half an inch or less long), but may need to be rather deep. All that seems necessary is the discharge of even a few drops of pus, and then the leaving the part quiet, with warm moist applications over it. If such an opening be not made in due time, extensive suppuration is nearly sure to ensue, and greatly increase the duration and mischief of the disease.

The rest of the treatment of such cases must usually consist in giving bark, warm purgatives (if any), good food, and in applying warm poultices or water-dressing, and fomentations to the inflamed part, both before and after the puncture.

Suppuration of Strumous Glands.—The great number of strumous children that come to out-patients' rooms with slowly suppurating cervical and other lymphatic glands, supply, I believe, evidence enough that the best plan in all such cases is to leave the suppuration to increase till the skin over it is so thin, that one might think that in a day or two spontaneous ulceration would ensue. The thinnest part of the skin should then be punctured with a small knife, so as to make an opening not more than two lines in length. Through this opening the pus should be allowed to flow out slowly: the abscess-walls should on no account be pressed. If the pus will flow in mere drops, it is well; if it stop altogether, no harm will follow. No more should be done than to cover the abscess with a soft poultice or with warm water-dressing, which should be removed twice or three times a-day. The abscess thus treated will slowly empty itself, as the inflamed and stretched skin slowly recovers its elasticity and contractile power; or if the little wound should heal before the emptying, it will in a day or two reopen; or, at the most, the puncture may need to be repeated. The advantage of the plan is, that the punctured skin does not ulcerate or slough, the abscess-wall does not inflame, and recovery ensues without disturbance of the general health, and with a scarcely visible scar. In the great number of cases that I have thus treated, I do not remember to have failed to obtain these advantages. Usually the healing of the abscess is completed within three weeks,—in strong contrast, as to both time and manner, with the tedious healing and ugly scarring that often ensue when these abscesses are left to open spontaneously, or are opened widely with the knife or caustic.

The internal treatment which I have always employed in these cases, when suppuration has taken place (and which, if any, will prevent its occurrence) is the giving of tonics, or iron, and good food. The medicines for children may be, according to the case, from two to five grains of the potassio-tartrate of iron, or from five to ten grains of the liquor cinchonæ, or a drachm of the cod-liver oil, three times a day. The first I think best in ordinary cases, in which the characters of struma are well marked, and not complicated; the second appears best when with the struma there is marked debility, drooping, deadly pallor, duskiness; and I think it is a very good plan to give the bark with lime-water; the third seems fittest when great emaciation exists. In all cases it appears useful to give

occasional small doses of the hydrargyrum cum cretâ, with rhubarb or the sesquioxide of iron. I doubt whether iodine does good in any of these cases, unless in combination with iron.

Strumous Inguinal Glands.—Among the affections often wrongly classed with the syphilitic, is a form of suppuration in the inguinal glands, which is apt to occur in those that are enfeebled and of strumous constitution. The confusion of it with syphilis is probably due to its often occurring after gonorrhœa; but it is often seen with no such connexion, and when it does follow gonorrhœa, it is often so late after the cessation of the discharge, that we can only ascribe its occurrence to the general debility which gonorrhœa is apt to produce in weakly persons.

The disease may affect the glands both above and below the crural arch, or either of these sets separately; and the feature which most certainly distinguishes it from syphilitic glandular disease is, that the inflammation, which leads slowly to suppuration, appears to involve separately each gland, with its immediate investments. The glands are not collected, as in one inflamed mass: neither is there much external swelling, or much inflammation around the proper substance of the glands; but they lie separately swollen, and commonly the skin over each, though scarcely, if at all, elevated, appears as a separate small red patch. When suppuration ensues, each gland suppurates and opens separately, or with subcutaneous narrow tracks of communication with the rest. Thus, late in the disease, we may see one or both groins, with two, three, or more openings, leading to as many suppurating cavities or tracks extending under comparatively healthy skin.

In all the characters just described, this disease of the inguinal glands bears the admitted marks of usual, but not constant, distinction between syphilitic and strumous inflammation; of the former as leading to suppuration about the glands, the latter to suppuration in them. And, in correspondence with this, the usual characters of strumous inflammations are noticeable; such as the pale rosy redness of the inflamed integuments, the thinness of the pus, the general tardiness of both the suppurating and the healing process.

The best treatment appears to be, when suppuration has not yet ensued, the giving of iodide of iron, in doses of about a drachm of the syrup thrice daily, with occasional aperients, good food, and the constant application of warmth. If the glands have suppurated, each, when the skin is thin or feels undermined, should be punctured with a small knife; and the pus may be allowed to flow out slowly without pressure. The general treatment after puncture may be the same as before; and if the abscess-cavities appear very tardy in healing, lotions of nitrate of silver should be dropped into them, or, if there be sinuses, they should be injected with solution of iodine. Complete rest is not necessary; the general advantage of moderate exercise in the open air is greater than the injury done by moderate movements of the groins.

I know no disease in which the iodide of iron does so much good as in this; and it appears better than any other preparation of either iodine or iron, and better than bark in any form.

Cancerous Lymphatic Glands.—Few diseases are so insidious in their early progress as primary cancer in the cervical lymphatic glands. Beginning like an ordinary hypertrophy or chronic inflammation of the glands, it may advance far without exciting much, if any, suspicion of its terrible nature. Then, as the swelling increases, and, if increasing rapidly, becomes softer at its most prominent part and covered with florid skin, the imitation of suppuration may be so close as to deceive the most practised touch. Puncture by mistake may now discover what is going on; but in some cases, it may only prolong the oversight; for suppuration may have taken place in the substance of a cancerous gland. I have even seen repeated collections of pus in a cluster of cancerous glands emptied by repeated punctures, prolonging the belief that no cancerous disease existed, though other signs of its presence seemed distinct.

I cannot tell how this error of diagnosis may be always avoided; but the following may be useful helps. In patients of middle or older age, all enlargements of cervical glands, that are not evidently inflammatory or sympathetic, should excite some suspicion of cancer. The suspicion should be the greater the older the patient is. It must be increased, if the glands affected are under the upper part of the mastoid muscle, and still more if they are under the middle of the muscle.

It is a bad sign when they form a close compact cluster, or when, after puncture, the swelling does not at all subside: and equally bad when the swelling, as it increases, becomes less movable. The harder the glands are at first, the more they must be feared; and the probability of cancer is greatly increased if the patient loses weight and strength, or is a member of a family in which cancer has occurred.

The difficulty of diagnosis which is here referred to occurs most commonly in cases of primary cancer of the glands: but it may occur also in those of secondary cancer; for the disease in the glands may so predominate over the primary disease in the tongue, mouth, or jaws, that of this the patient may know little and say nothing. All these parts therefore should, in every case, be carefully looked to.—*Med. Times and Gazette, Jan* 2, 1858, *p.* 4.

80.—*Powdered Chlorate of Potash as an Application to Ulcers, &c.*—For some time past, at the Metropolitan Free Hospital, Mr. Hutchinson has employed the powdered chlorate of potash as an application to cachectic ulcers. In most cases it appears to exert a very beneficial influence, speedily inducing cicatrization; and it is very convenient of use. The cases in which it has best suited have been some of ulcers of the leg, open buboes, simple sores on the skin of the penis, and cracked nipples. In the latter it answers admirably. The salt should be powdered very fine and dusted into the sore with the finger. It produces sharp smarting for a short time, but the pain soon subsides. In most cases suitable for its use it is also desirable to prescribe its internal administration; but with a view to making the experiments more conclusive, in the cases upon which Mr. Hutchinson founded his opinion of its efficacy, no other treatment was adopted.—*Lancet, Dec.* 26, 1857, *p.* 648.

81.—*Subcutaneous Operation on Varicose Veins.* By Henry Lee, Esq.—In my first attempts to perform this operation, I cannot say that my success was quite such as I could have wished, and, indeed, expected. One case in particular had some severe local and constitutional symptoms, and I had reason to believe that an abscess had formed in the vein, where it had been traversed by one of the needles. Reflecting subsequently on the cause of this, I became convinced that the origin of the mischief was, that the needle had pierced the vein instead of being made to pass fairly under it. In subsequent operations this point was attended to, and performed with due precaution, as it has now been by Mr. Erichsen, and various other surgeons, a great number of times; it has not, so far as I am aware, been attended with danger. During the last twelve months a further improvement, as I conceive, has been effected in regard to this operation. The vein is divided as soon as the needles have been placed under it. The subcutaneous incision heals in about the same time as in the other operation, and the confinement of two days previous to the section of the vein is avoided. In this operation the blood which the vein contains between the two needles is allowed to flow out of the incision, and thus any tendency that there might be for stagnant or effused blood to decompose, is avoided. In performing the operation in the manner now described, the blood contained in the veins between two needles escapes; the sides of the vein necessarily fall together, and are maintained in apposition. The sides of the vein compressed by the needles and ligature suffer no violence or injury. The subcutaneous incision is pretty sure to heal by first intention, and even should it not, the vein being closed above and below, no diseased secretion can find its way along its channel. Various cases were given to illustrate the different modes of producing obliteration of veins by subcutaneous division.—*Lancet, Jan.* 2, 1858, *p.* 19.

82.—ON THE TREATMENT OF IN-GROWING NAILS.

By Jas. Long, Esq., Surgeon to the Liverpool Royal Infirmary, Lecturer on Surgery in the Liverpool Royal Infirmary School of Medicine.

The following simple plan of treating in-growing nails I have practised for

nearly thirty years; having first had recourse to it on myself after having suffered six weeks from that troublesome affection.

The treatment is so simple and natural, that I should not have submitted it to the notice of the profession, had I not found that although it has long been practised by some, and has at my suggestion been adopted by others, it is not generally known, and that in the various methods that have formerly and recently been brought forward to remedy this annoyance, the exact plan that I pursue has not been adopted. It is painless and effective, but to render it so, certain minutiæ must be attended to: these I shall now detail.

Suppose the border of the great toe-nail deeply imbedded in the soft parts, with florid irritable granulations projecting over it, and suppuration extending along the root of the nail, the person unable to put his foot to the ground, or to bear the slightest touch on the irritable part. I first wash the toe in tepid water, and make the parts as dry as possible with cotton wool. I then with the flat end of a very fine probe, insinuate between the nail and the granulations a little cotton wool, which I extend backwards along the groove between the base of the nail and cuticle. I next freely rub *the nail* with nitrate of silver, close to the cotton, not allowing the caustic to touch the granulations; and lastly, place a thin layer of cotton wool around the toe.

If examined in two days or so, the state of the parts will be found as follows:—The nail will be perfectly black, and detached from the parts underneath to a greater or less extent; the cotton wool by its imbibition of the caustic and secretions, will have become converted into a hard blueish substance; the granulations will have receded from the nail, and their extreme sensitiveness will have disappeared. The dead piece of nail can then be easily removed by a fine pair of scissors introduced underneath it, and a little cotton wool, carefully introduced into the gap, will, in a simple case, complete the cure.

Should the nail be very thick, it will be necessary, after the first application of the caustic, to scrape off the dead and blackened surface, and apply it a second time before the nail becomes so permeated by it as to lose its connexion with the parts beneath. A third application is rarely required. By applying the caustic over the whole nail, and around its base and borders, and pushing the skin back by means of cotton wool introduced between it and the nail, after each application, the whole nail may be removed without pain. The recurrence of the growth may be prevented by scraping the middle of the body of the nail from time to time, so as to keep it thin, introducing at the same time a little cotton wool along its border.

Dr. Nevins has directed my attention to the following remarks on the above subject in his Translation of the Pharmacopœia, in the article on Nitrate of Silver: —"*Previous to the removal of the nail*, the moistened nail ought to be *freely* rubbed with this caustic, and in two or three hours a poultice should be applied; this makes the nail soft, and the next day, if the nail be again washed in hot water, it can be dissected with ease from the adjacent tissues, *as far as the caustic has been applied*. By this means the horrible and barbarous operation of tearing out the nail, or a portion of it, by force, may be entirely dispensed with.

"I can speak of this with confidence, having applied it thus in several instances."—*Liverpool Medico-Chirurgical Journal*, *Jan.*, 1858, *p.* 26.

83.—*On Ingrowing of the Toe-Nail.* By a Subscriber to the "Medical Circular."—Ingrowing of the nails is a fallacy; it is the upgrowing of the quick, through exposing the same, and taking away the natural protection and support of the nail itself.

Cut out a piece of the *finger*-nail, over the quick, and the same thing takes place—viz., up comes a painful fungus, and down comes the surgeon with his scissors and forceps, and in no time the patient is writhing under a remedy worse than the disease.

The following treatment has been successful in every case which has fallen to my lot, about 140:—

Soak the part well in hot water, and delicately remove all discharge, pass in

plenty of very finely-powdered burnt alum, cover all the fungus with the same, and on the next and every day do the same, until no longer sensitive, then strap down the alum, first putting on the top, not under, a piece of lint.—*Medical Courier, Jan.* 27, 1858, *p.* 38.

84.—*Threatened Gangrene.*—We recently noticed an old man, about sixty-five years of age, in the Charing-Cross Hospital, under Mr. Hancock's care, whose feet were threatened with gangrene, but which has been prevented by the timely application of wadding, thus keeping them warm and encouraging free circulation. He had all the appearance of an imbiber, his nose being of a preternatural redness.—*Lancet, Jan.* 16, 1858, *p.* 64.

85.—*Chlorate-of-Potash Lotion.*—This is frequently prescribed by Mr. Cooke, at the Royal Free Hospital, as an excellent detergent and antiseptic in chronic fœtid suppurating ulcers of the leg or other part of the body. It proves very serviceable also in ulcers exhibiting a tendency to sloughing. It is composed of half an ounce of the chlorate of potash to a pint of water, with forty drops of strong hydrochloric acid. It is stimulating in its action also, and converts a foul ulcer into a healthy-looking granulating sore. Another form of lotion, which combines the advantages of being, perhaps, more stimulating and less irritating, used occasionally by Mr. Cook also, is a combination of potash and manganese (a modification of the caustic recently introduced by him), in the proportion of ten grains to the ounce of water.—*Lancet, Jan.* 16, 1858, *p.* 64.

86.—ON A NEW MODE OF TREATING STRUMOUS ABSCESSES.

By Dr. Graves, Cookstown.

He must be a bold man who, in these days of science and of progress, claims for himself the discovery of a new method of treatment. At the risk, however, of being, perhaps, considered egotistical, I am induced to publish a plan which I am satisfied has, in my own practice, proved useful, and to which I have been unable to find any reference in the books at my command; nor have any of the medical friends with whom I have discussed the subject been more successful than myself.

All surgeons are familiar with the class of cases to which I would draw attention, and few but have heartily wished them removed from their care. I allude to subcutaneous abscess, occurring in patients of a strumous diathesis, chiefly met with in the superficial cervical glands—tedious and insidious in their course, and generally, after months of suffering, ending at the best in elevated cicatrices, with wheals and scars; under the most careful and judicious treatment bringing unmerited discredit on the practitioner, and disgust to the patient.

I have had recourse to various expedients—free incisions, valvular openings, poultices, and spontaneous evacuation—with a like uncertain result; presenting the worst appearance, healing without trouble, while others, in every respect hopeful, have baffled all my exertions for months.

Several such were, in dispensary and private practice, under my care during the past year; and seeing that iodine, cod-liver oil, iron, &c., applied externally and internally (administered with, when it could be obtained, a generous diet, warm clothing, &c., &c.), produced little benefit, I determined to try the effect of a counter-inflammation; and observing that a thickening and adhesive process followed vaccination, it occurred to me, that if this was satisfactorily established in one of these abscesses, the sac would probably be obliterated without much difficulty.

We all know that, in secondary vaccination, a pustule is produced by the introduction of the virus, after the lapse of a definite number of days; and though the result may not prove a true vaccine pustule, still the inflammation will, in the majority of instances, possess a specific character. Be the result successful or

otherwise, I will feel deeply obliged to any gentleman who will kindly furnish me with the particulars of any cases which he may determine to treat on this principle.

In January, 1857, A. B., a mill-worker, aged 14, of strumous habit, applied at the Cookstown Dispensary, suffering from an abscess of the cervical glands on the right side of the neck, about the size of a nutmeg. The skin was but slightly discoloured, but fluctuation evident. I gave exit, by a free incision, at the lowest part, to a small quantity of matter; then charging my lancet with cowpock infection, introduced it in the usual way, by a few slight scratches at either side of the wound, taking care that it should come as little as possible in contact with the discharge from the wound. On the eighth day it had evidently "taken" well; there was the well-marked inflammation surrounding the vesicles. "On the ninth," as Maunsell and Evanson describe it, "there was formed round the base an inflamed ring, with an areola of an inch and a half or two inches in diameter." In this case the redness was more extensive. On *the twelfth* there was considerable inflammation and hardness all over the surface of the tumour, and very little discharge from the original opening. On *the sixteenth* this had in a great measure disappeared; and when, in about three weeks afterwards, the girl called upon me, the crust had dropped off, there was no trace of the abscess, and very little more scar than is left after an ordinary vaccination. I should mention that this patient had not been previously vaccinated.

In March, E. M., aged 21, a person in comfortable circumstances, consulted me. The history and progress of this case is so similar to that just related, that I need not enter into particulars. The result was alike satisfactory.

September. In the third case, that of C. R., aged 16, in not good health, there were some circumstances that may require notice. She had a tumour on the left side of the neck, about the size of a horsebean, very red—bluish red—and evidently about to break. Altogether this appeared an unfavourable subject. For some time I hesitated as to the expediency of treating her in a similar manner. The two former cases had given me confidence, and I determined to risk the experiment. Matters went on well till the *ninth* day, when a considerable amount of inflammatory action had set in. From the wound escaped an unhealthy ichorous discharge. I administered an aperient, and ordered quiet, but on the second day after, the *eleventh* from vaccination, there was well-marked erysipelas of the neck and side of face, but, as first observed, I think by the late Dr. Graves, limited by the median line. A linseed meal poultice was ordered, salines and diaphoretics given, and within a week the girl was walking about.

In this instance, I cannot say what was the effect of the vaccine inflammation, "*per se*," inasmuch as it was complicated with the erysipelas—it is not easy, among pauper patients, to obtain accurate accounts; but this I do know, that at the end of four weeks the abscess was obliterated with very trifling deformity.—*Dublin Hospital Gazette, Feb.* 15, 1858, *p.* 57.

87.—ON MENTAGRA OR SYCOSIS.

By Dr. Wm. Jenner, Physician to University College Hospital, the Hospital for Sick Children &c.

This is a disease of the beard, moustache, whiskers, and inner surface of the nares, in which a little fungus finds a nidus between the root of the hair and the wall of its follicle. The plant is the Microsporon mentagrophytes, and it makes its presence known by the inflammation it excites. The inflammation causes thickening and induration of the tissues around the follicle, and suppuration of the follicle itself. As the disease originates in the follicle, a hair may be seen to traverse the centre of each pustule. The pus and epithelium about the orifice of the follicle dry into a thick brownish scab. When the scabs are numerous, and the parts about tuberculated from the swollen and irregular induration around the follicles, the part affected with pus is supposed to have some resemblance to the pulp of the fig; hence the name sycosis. Between the scabs we often find little scaly particles formed of epithelium. Do not confound a variety of impetigo which I shall presently describe to you, with mentagra. The induration and swelling of the tissues is

trifling in impetigo. Acne of these parts also may be taken for sycosis, but in acne the induration is greater than in sycosis, and the suppuration less rapid. There is no vegetable parasite in the hair follicles in impetigo, nor in the sebaceous follicles in acne.

Mentagra is often a very obstinate affection. The *treatment* of this disease is to be conducted on the same principles as those of the other affections of its class. Substances destructive to vegetable life are to be applied to the diseased skin; and as the plant is *in* the hair follicles, they must be applied in a form fitted to enter the follicles. An ointment of lard and corrosive sublimate, in the proportion of a grain to the drachm, is sometimes very useful. The white precipitate ointment of the 'London Pharmacopœia' may effect a cure. Dr. Thompson recommends strongly an ointment composed of a scruple of iodide of sulphur and an ounce of lard. Warm fomentations and poultices, by removing the scabs and allaying the inflammation afford much relief to the patient. The condition of the digestive organs must be attended to, and purgatives, tonics, and antacids exhibited as required. A good and generous diet is usually necessary. Epilation is sometimes essential for effecting a cure. I had a case under my care some time since, in which the disease was seated in the hair-follicles, just at and within the orifice of the nares. I cannot tell you how many quarts of cod-liver oil, gallons of decoction of sarsaparilla, ounces of quinine, iodide of potassium, &c., the patient swallowed, nor how many pounds of ointments innumerable he had applied. He was a druggist, and had kept a careful record of all that had been prescribed for himself, which he read over to me. It was a most ludicrous list, and I was not surprised at his desire to "Throw physic to the dogs." He was well pleased to submit to the removal of the hairs by a pair of forceps, rather than to have to take more drugs; and he was still better pleased when he found how soon the disease yielded to this method of treatment.—*Med. Times and Gazette, Dec.* 26, 1857, *p.* 650.

88.—A MIXTURE OF COLLODION AND CASTOR OIL AS AN APPLICATION TO SEVERE BURNS AND SCALDS.

From Notes by P. W. Swain, Esq., House Surgeon, King's College Hospital.

Case 1.—Elizabeth G., aged 78, was admitted into King's College Hospital, on November 27th, 1857, with a severe burn, extending over the front of the chest, as far down as the mammæ, and upwards over the front and side of the neck and both cheeks. In some places the cuticle was much charred; and extensive vesications existed about the side of the neck and face. The accident was caused by the old woman falling forwards on to the fire while reaching up to the mantelpiece.

On admission, the parts were cleansed; the vesications were punctured; the hair was shaved from the front and sides of the head; and an application, composed of two parts of collodion and one part of castor oil, was painted over the entire surface of the burn. This application was repeated three or four times in the course of the day, so as to form a covering, which entirely excluded all contact of the atmosphere. She was ordered ammonia, and small doses of tincture of opium every four hours; and, as she was in a very low condition, an ounce of brandy every hour. On the evening of the day on which she was admitted, her breathing became so laboured, that suffocation at one time seemed impending; so much so, that, had she not somewhat revived, tracheotomy would have been performed. The foregoing plan of treatment was persisted in up to December 2nd, when, for brandy, was substituted twelve ounces of gin; and, as suppuration had set in, a linseed-meal poultice was applied over the whole surface of the burn. On December 5th, the slough having separated, and the sore presenting a healthy surface, an ointment, composed of an ounce of prepared chalk, two drachms of olive oil, and half an ounce of spermaceti ointment, spread on lint, was applied. Up to the present date (December 10th), this treatment has been persisted in; the sore is healing; and the woman, whose advanced age precluded almost all hopes of recovery, is in a satisfactory state.

Case 2.—James K., aged twenty-eight, was admitted into King's College Hospital

on September 24th, with a severe burn extending over the upper part of the chest, the front of the neck, the left shoulder, and front of the left forearm. In many places the cuticle was destroyed, and the parts much charred. The patient is subject to epileptic fits, during one of which he fell forwards into the fire, and thus sustained the injury. As in the above case, on admission, the whole surface of the burn was thickly painted over with collodion and castor oil. This treatment was persisted in up to October 4th, when suppuration having set in, a linseed-meal poultice was applied over the parts. On October 8th, the surface of the sore having cleaned, and presenting healthy granulations, it was dressed with compound chalk ointment and olive oil. On October 30th, the sore was reported as being healed over nearly the whole surface; the cicatrix left was of a very slight character, considering the severity of the burn; and some slight contractions which presented themselves on the front of the neck and the axilla were easily counteracted by the application of a simple apparatus.

Case 3.—Abraham F., aged 6, was admitted into King's College Hospital, on December 13th, 1857, with a scald extending over the front of the left thigh and leg, and over the front of the right leg, caused by a kettle of boiling water falling from the fire over him. Several large vesications existed, and in some parts the surface was raw. On admission, the mixture of collodion and castor oil was applied to the parts. The pain, which was at first great, ceased almost instantaneously, and the child has since experienced little or no inconvenience.

Remarks.—The use of this application in burns and scalds, which has now been extensively tried in King's College Hospital, appears to possess many advantages over all others. It affords a coating to the parts which entirely excludes the atmosphere without obscuring the surface of the sore from view. It is by noymeans a *dirty* application, and possesses a pleasing odour, which counteracts the unpleasant emanations generally attendant on burns. It also appears to have the effect of immediately lessening the pain; and in all the cases in which it has been applied, the sloughs which have subsequently formed have appeared to be much less deep than usual.—*British Med. Journal, Dec.* 26, 1857, *p.* 1059.

89.—ON TINEA FAVOSA.

By Dr. Wm. Jenner, Physician to University College Hospital, the Hospital for Sick Children, &c.

Tinea favosa is a disease of the hairy scalp. Now and then, however, it occupies other parts.

Be it situated on scalp, trunk, or extremities, the disease is primarily seated in the hair-follicles, and is characterized by dry brimstone-yellow crusts, each crust being cup-shared, and having a hair running through its centre. The size of the crusts varies from a mere point to half an inch in diameter. The separate crusts coalesce as they increase in size and number, and then you have a large, dry, irregularly pitted crust. You will observe that the crusts are buried to some depth in the cutis, so that if I raise one from its place, I expose a depression of the cutis in which it was imbedded. The depressed surface is always redder than healthy skin, but only here and there is the cutis denuded of its epithelial covering. You may observe, further, that among the dry crusts are a few pustules. The pustules are not always present, they are an accidental complication. These pustules indicate the co-existence of impetigo. I have placed under one of the microscopes a little of the fluid from a pustule, and under the other microscope some of the dry powder from a crust. In the former are abundance of pus corpuscles and nothing else. In the latter the sporules and mycelium of the Achorion Schönleinii, and not a corpuscle of any kind. Do not fancy that the dry crusts commence as pustules; the crusts are dry from the moment they are first seen. Note the difference in form and size of the sporules and mycelium of the Achorion Schönleinii and those of the Trichophyton tonsurans. The sporules of the Achorion are oval, and comparatively large; those of the Trichophyton spherical and very small. You can see the mycelium and sporules running upwards and ramifying in the hair which passes through the centre of each little sulphur-coloured cup-shaped crust.

The steps of the disease are these: first, there is the thickening of the root-sheath

of the hair-follicle, and accumulation of its secretion about its orifice. So long as there is nothing more than this you are not able to say that any disease exists; but let the sporules of the Achorion fall on the prepared soil, and the sulphur-coloured crusts of Tinea favosa are rapidly formed. The plant grows outwards between the layers of epithelium, downwards into the follicle, and, entering the hair near its roots, shoots upwards into its substance.

The Tricophyton tonsurans, the plant proper to Tinea tonsurans, grows into the hair-follicle, but its presence inflicts no permanent injury on the structures of the follicle. The Achorian Schönleinii, unless it be soon eradicated, destroys the follicle, and permanent baldness is the consequence.

The crusts of Tinea favosa have a peculiar fœtid odour, and from the impediment they offer to cleansing the head, favour the occurrence of vermin. The pediculi are found chiefly in the large crusts. Intolerable itching is often experienced. There is a variety of Tinea favosa in which the crusts are from the first amorphous, wanting in the cup-shaped character and less bright in colour.

The objects to be kept in view in the *treatment* are to remove or destroy the plant, and to improve the state of the secretions of the part which is its seat. As the subjects of tinea favosa are often strumous, you may find benefit from the administration of cod-liver oil, syrup of iodide of iron, calumba, rhubarb, and soda, and other remedies of the same class. But all other means will fail unless you destroy and remove the plant. For this purpose you employ some of the parasiticide substances, that is to say, substances destructive of vegetable life, and at the same time you must remove by mechanical means as much of the plant as possible.

The crusts are to be removed by a bread and water poultice, or better still, by the continuous application of lint, dipped in a solution of sulphurous acid. Bichloride of mercury, dissolved in water or mixed with lard in the proportion of eight grains to the ounce, and acetate of copper mixed with lard, half-a-drachm to the ounce, are two of the most powerful parasiticides. A saturated solution of sulphurous acid is the remedy I employ, and in this manner: a piece of lint dipped in solution is closely and constantly applied to the affected part, and this is covered, to prevent evaporation, by oil silk, or by a second piece of lint spread pretty thickly with lard. If the disease be on the trunk or extremities, and general health good, it may be rapidly cured in this manner. But if the disease be seated on the hairy scalp, and the plant has entered the hair follicles, and shot up into the hairs themselves, considerable difficulty is experienced in bringing the parasiticides in contact with the plant, and as a consequence epilation is almost essential for permanent cure. If you will pull out the hairs before the half-follicle is destroyed no baldness follows. At first sight epilation may strike you as a very painful operation, but if well performed it is not so. Each hair should be grasped with a pair of forceps adapted to the purpose, just where it escapes from its follicle, and pulled sharply in the line of the direction of its insertion into the follicle. As the hairs are much less firmly fixed in their follicles than in health, epilation is so much the more easily effected. If the disease be limited in extent no practical difficulty exists to its cure by epilation; if it occupies the whole or a great part of the scalp, the cure requires much time and great patience. So long as a sporule or a branch of mycelium remains in a hair undestroyed, so long is it certain the disease will return.

Before epilation, *l'huile de cade* is by many applied to the part from which the hairs are to be removed. It is said to diminish the sensibility, and loosen the attachment of the hair to its follicle. The old pitch cap was merely a quick mode of epilation, and not so painful as you would suppose. If herpes circinnatus be present, the extension of the ring of vesicle should be prevented, and on their first appearance the small patches of herpes should be destroyed with nitrate of silver.

Tinea favosa is the disease described by Bateman under the name of Porrigo lupinosa. The Porrigo favosa of William Bateman and Thompson is a species of impetigo. These excellent observers mistook the yellow crusts of Tinea favosa for dried pustules.—*Med. Times and Gazette, Dec.* 26, 1857, *p.* 649.

90.—*Collodion and Castor Oil as an Artificial Cuticle.*—The mixture has been used of late with success in King's College Hospital, as an application to burns and abrasions, to form a sort of artificial cuticle. It has been used at the suggestion of Dr. Savage, at the Samaritan Hospital, in two cases of vesico-vaginal fistula, now there under the care of Mr. Spencer Wells. In one of these cases there is a recto-vaginal fistula also. In both the excoriation of the labia, perineum, and thighs, from the constant dribbling of urine and the consequent smarting, has been very distressing. Extreme cleanliness, careful drying of the parts, and the use of simple ointment, afforded but little relief. The mixture of one part of collodion to two parts of castor-oil was therefore used and gave the most marked relief. It causes some smarting for a few minutes after its application, but it then forms a smooth elastic coating or varnish, which resists the action of the urine for many hours, and effectually protects the excoriated skin from the irritating fluid.—*Med. Times and Gazette, Jan.* 30, 1858, *p.* 119.

91.—*Pediculi Pubis.*—Dr. HAMAL recommends the following treatment. After having thoroughly washed the parts covered with hair, first with soap and water, and then with clear water, and drying them, pour chloroform on drop by drop, and rub it in. Then cover the parts with a folded handkerchief for half an hour, when another washing with soap and water should be performed in order to detach the debris of the pediculi.—*Gaz. des Hôp.—Med. Times and Gazette, Nov.* 7, 1857, *p.* 482.

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92 —*Eczema of the Face in Children.*—Dr. BEHEEND recommends the following application for the crusts which frequently cover the faces of children :—cod-liver oil, fifteen, and bicarbonate of soda, two parts.—*Bull de Thérap.—Med. Times and Gazette, Nov.* 7, 1857, *p.* 482.

93.—*Treatment of Sycosis.* By WEEDON COOKE, Esq.—Poultice with linseed until the scabs are removed, and then apply constantly a lotion composed of two drachms of manganese with potassa or permanganate of potash and a pint of water. After the ulcers are healed, it is desirable to apply some red precipitate ointment every night for some weeks.—*Lancet, April* 17, 1858, *p.* 404.

SYPHILITIC DISEASES.

94.—ON THE NATURAL HISTORY OF SYPHILIS.

By Dr. WM. HENRY PORTER, Professor of Surgery in the Royal College of Surgeons, Ireland, &c.

[The syphilitic virus having once entered the system, symptoms are produced, almost in a regular order of succession, each order differing from the other, and in each so many and various are the forms of disease which may appear, that the practitioner cannot predicate any symptom of syphilis without a chance of error or mistake.]

In the present state of our knowledge, an accurate diagnosis is altogether unattainable—perhaps it may ever remain so; but obviously the first step to improvement is in the right understanding of the position we at present occupy, and of the facts and observations that gradually led to it. This, then, will lead to the consideration of two very important questions—one, as to the circumstances that might cause the products of the poison to be mistaken for other affections, or others for them, embracing the subject of syphiloid diseases, or pseudo-syphilis; the other, whether these products are the results of one poison or of several: it is obvious that this discussion must be conducted with a frequent reference to mer-

cury, for it was with a view to the avoidance of this much dreaded medicine that the subject was ever investigated.

[John Hunter first made the observation that many sores occurred on the genitals as a consequence of impure connexion which did not require mercury for their cure, and this has subsequently been confirmed by many others. But no progress has been made in distinguishing between genuine syphilitic ulcers, and those which are innocent and harmless.]

If inoculation is relied on as a test, it has been already shown to be inadequate and imperfect, unless performed on a different and a healthy person. If the hardness of the base of the sore is believed to be characteristic, many sores not so circumstanced are followed by secondary symptoms, and *vice versâ*. If it be tried by the effects of mercury, it has been clearly established that every sore of every kind may be healed without this medicine. Therefore, although I acknowledge that some, nay, that many, or even the majority of these primary sores may not be syphilitic, yet I am ignorant of the mark or character by which one can with certainty be distinguished from the other. That the genuine secondary symptoms are often irregular in appearance, indefinite as to time of development, and uncertain in order and duration, must be admitted also; that is, they so frequently deviate from what we are accustomed to consider as the proper forms and course of the disease, as scarcely to fall within its domain; and, therefore, I cannot with safety pronounce that any suspicious symptom is perfectly innocuous—it may, notwithstanding any imperfection of character, be syphilis nevertheless. Thus, doubtful symptoms occasionally, nay, frequently, present themselves, which I know to be difficult, if not impossible, clearly and unmistakably to mark off as syphilitic; but I also know it to be more difficult and infinitely more hazardous to aver that they are not so, and therefore practically I disbelieve in the existence of pseudo-syphilis at all.

As the use of mercury has been again and again resumed, in despite of every obloquy,—nay, in despite of every mischief wrought by the most cruel mismanagement,—so will it in the present instance, if the lues venerea is to be cured. Doubtless, under the modern system much apparent good has been effected, and a vast deal of actual suffering spared, for it may not be denied that we have now nothing like the destruction and misery that were but too prevalent under the hyper-mercurial system,—I mean that which inculcated the unsparing use of the medicine for every sore and in every constitution. But in lieu of these evils it is greatly to be feared that we have secondary symptoms infinitely more prevalent, and especially that one which I have adopted as the only true criterion of the existence of syphilitic taint,—namely, the production of a putrid or pocky offspring. Which of these evils may occasion the more deplorable consequences to society, it is not my province to inquire: fortunately, the scientific practioner, who understands the resources of his medicine, is not driven upon either, and both may be avoided by subjecting to a careful, well-regulated, and judicious mercurial treatment, "every symptom so far resembling the genuine disease in appearance and history as to be liable to be mistaken for it.

Having examined, with all the candour and fairness of which I am capable, some of the most important features in the natural history of syphilis, objecting freely to opinions that seemed questionable, no matter by what authority sustained, and endeavouring to support my own views as far as possible by the experience and arguments of others,—I look back with astonishment at the small amount of progress that has been made, and at the mass of obscurity that still hangs over this seemingly devoted subject. I have previously pointed attention to a law which had (as far as I know) hitherto escaped observation, that "the poison of syphilis never returned on itself, or re-contaminated the source from which it was derived;" and the effects of that law in invalidating all the conclusions supposed to be established by inoculation. I then attempted to explain certain results produced by the continuance or persistence of the poison, and its lying dormant within the individual for an unlimited space of time; and how every peculiarity or property of it seems designed to favour its extensive dissemination. I have now followed out the disease as it shows itself in a multitudinous diversity of forms, and have canvassed some of the causes that seem to modify its appearance, its progress, its termination. I have examined the question of a plu-

rality of poisons as productive of a number of actually different diseases; pointed out the possible effect of a renovation of the infection in occasionally introducing some black lion, or other fearfully aggravated form of disease, and acknowledged that it sometimes assumes a milder aspect, as if about gradually to wear itself out and disappear. So far I have endeavoured to point out, in the differences between syphilis and other blood diseases, some causes for the exceeding variety in the characters of its symptoms, yet still it is obvious that there is something more; something still remaining behind, more potential in operation than any of these or all; something needed to explain the wonderful difference in the time, and order, and manner of development of the various symptoms, and of which we are profoundly ignorant. Thus it has been seen that syphilis may lurk for years in one individual, never exhibiting a single symptom, never occasioning so much inconvenience as to arouse suspicion, until the mischief is discovered by the unexpected appearance of an infected offspring. Contrast this with the fearfully destructive and rapid progress of the disease in others, sore following sore, and symptom succeeding symptom, until the entire body has become apparently a mass of filth and rottenness. We too frequently see cases in which, from the first appearance of the chancre, the patient has never been one moment free; eruptions, sore throat, iritis, swelled testicle, nodes and caries, rupia and ulcerations following each other with unceasing rapidity until he sinks under his sufferings, and dies one of the most pitiable objects in creation. The latter of these is confessedly a case of syphilis, without any possibility of doubt or error; so is the former, unless it be asserted that the birth of a pocky child is no proof of the existence of the disease in the parent. They are both specimens of the one disease,—the products of one poison,—why does this poison lie dormant and at rest in some, while it occasions the most unremitting and dreadful sufferings in others? In all classes of the community,—in apparently all kinds of constitutions and temperaments,—in persons of every habit and pursuit of life,—this unaccountable diversity is observed. I have already stated that I cannot trace any difference in the original infection, and therefore must refer it to some peculiar state or condition of the individual; I must say that it depends on his constitution. Now, after all, how very little of real or available information is gained by this method of dealing with the subject! We know that the course and progress of the disease may exhibit the greatest possible variety; that, once a chancre has healed, no one can tell whether it will be followed within a week by a sore throat, or an eruption, or whether the patient will remain to all appearance sound and healthy, until (it may be) in years afterwards he infects a wife and child; and we may say that this variety is determined by the constitution, but of the peculiarity of that constitution we are utterly and profoundly ignorant. Still we are, in this respect, not much worse off in dealing with syphilis than with many other affections. Out of fifty patients, the subjects of operation, we know not a few who may be attacked by erysipelas: out of a number wounded we cannot point out the one or two that may subsequently die of tetanus; we can neither prevent the occurrence, nor explain it when it has happened, otherwise than by reference to the constitution. This, then, of which confessedly so little is known, seems to be the great, the prevailing influence in determining the progress of syphilis, and perhaps in forming its characters of severity or mildness. How diffident should it make us in advancing or asserting a positive opinion, and how candid and forbearing in examining the views of others.—*Dub. Quarterly Journal, Nov.* 1857, *p.* 287.

95.—ON THE EVILS RESULTING FROM THE NON-MERCURIAL PLAN OF TREATMENT IN SYPHILIS.

By Dr. Cahill. (Read before the Western Medical and Surgical Society.)

Dr. Cahill commenced by narrating a number of cases in which the constitutional effect of syphilis had been very severe, and has extended, in spite of treatment, through many years, in all of which the early stage of the disease had not been attacked by mercury. After detailing these very carefully, he entered into the history of this plan of treatment, remarking that most of the Irish surgeons

who have adopted it have since changed their opinions respecting it. He maintained that the severest and worst forms of constitutional syphilis occur when no mercury whatever has been given for the primary disease, and that the notion that the severe cases of secondary disease are mainly due to the mercury administered is not founded in fact. Mercury, to be of use, must be persevered in for at least six weeks, and to produce its good effects need not be given lavishly or recklessly. If attention be not paid to this fact, no permanent effect is produced, and other forms of the disease, as secondary or tertiary, are apt to follow immediately after. He recommended the use of the bichloride in doses of one-twelfth to a quarter of a grain, together with the inunction of the strong mercurial ointment, until the gums showed that the system was affected by the mercury. The bichloride is borne better than any other form of mercury, and can be continued with safety longer than any other mercurial preparation, not only in those cases, but even scrofulous diseases, in which its use is advisable; hence its peculiar value. Iodide of potassium, given with iodine, is the next remedy to be relied upon, though it is chiefly valuable in secondary and tertiary affections of the periosteum. In tertiary symptoms, the iodide is our sheet-anchor, and mercury should never be given in such cases to the extent of producing its specific effects; should a mercurial be required, the hyd. c. cretâ is to be recommended in conjunction with the iodide of potassium. Iron, arsenic, and mineral acids, under certain circumstances, are useful, especially after mercury has been fairly tried; these, with the ordinary means of restoring health, as good food, pure air, and rest, will generally promote a cure. He then alluded to the difficulty of distinguishing primary chancre, and the means employed by inoculation, and the peculiar hardness of the true Hunterian chancre, and to the chance there was of a chancre in the urethra being overlooked, and to other sources of error as to the curability of syphilis without mercury. He concluded with the following observations:—

1st. That the severest and most prolonged forms of the disease have arisen where no mercury has been given for the primary or early secondary affections.

2ndly. That as no symptoms identical with those of constitutional syphilis are produced by mercury, the notion that mercury is a cause of constitutional syphilis is founded in error.

3dly. That the administration of mercury may be so regulated as to preclude any of its severe effects; and supposing any are produced, it is manifest that they would be less severe than those caused by constitutional syphilis.

4thly. That the constitutional effects of mercury should be avoided in tertiary syphilis.

5thly. That the supposed successful treatment of syphilis without mercury is founded on erroneous diagnosis, or the cases have occurred in individuals already protected, or the subjects have been of that class who seem to enjoy immunity from the worst part of the complaint.—*Lancet*, *Dec.* 5, 1857, *p.* 581.

DISEASES OF THE EYE AND EAR.

96.—DIVISION OF THE TEAR PUNCTUM AND ITS CANAL.

For the performance of this little operation Mr. Solomon has laid aside the knife and director, and substituted a pair of Maunoir's scissors, that have narrow blades and sharp points. The advantages of this change are,—he finds great facility and rapidity of execution, a matter of moment in nervous patients; the slit is always perpendicular; it never re-unites, and the sides of the canal remain well everted. The greatest width of the blades of the scissors he makes use of, is one-sixth of an inch, their length from rivet to point half an inch. Having first explored the canal with the probe to ascertain if it is strictured, and what its direction may be relatively to the margin of the lid and the caruncle, the operator, bearing in mind the anatomical arrangement of the parts, enters the punctum, while the lid is on the stretch, with the point of the lower blade of the scissors, and then slightly depressing the handle, slides the blade along the canal

as far as the caruncle, where he pushes the point through the conjunctiva, and cuts out. If the punctum is constricted a common pin is used as a dilator before the introduction of the scissors. In the preceding description the lower canal is supposed to be the one selected for the treatment, though this method is also applicable to the upper.—*Medical Times and Gazette, Feb.* 20, 1858, *p.* 196.

97.—*Ointments for Tinea Tarsi.*—Almost the sole use for ointments in ophthalmic practice is against tinea of the lids. For the treatment of this most troublesome disease, several formulæ are contained in the Moorfields Pharmacopœia, most of them having some form of mercurial as their active ingredient. We have the unguent. hydrarg. nitr. dil., the strength of which is half a drachm of the nitrate of mercury ointment to seven drachms of lard; the unguent. hydrarg. mitius, which is a drachm of the nitrate of mercury ointment to nine of lard; the ung. hydrarg. nitrico-oxyd. dil., which consists of a drachm and a half of the ointment of the nitric oxide to six and a half of lard. Of those not containing mercury the compound zinc ointment is the only one; its formula is equal parts of the zinc and compound lead ointments; it is, we believe, very rarely used. The dilute nitrate of mercury ointment is the one which enjoys by far the largest amount of confidence.—*Medical Times and Gazette, January* 9, 1858, *p.* 35.

98.—THE OPERATION EMPLOYED IN CASES OF STRABISMUS.

The operation for internal squint as performed at the Central London Ophthalmic Hospital, by Mr. Walton, differs in the details from that done at most other institutions, and is executed in the following manner:

The conjunctiva and the sub-conjunctival tissue are snipped through vertically, just over the lower part of the internal rectus, at a distance of a line from the cornea. A blunt hook, slightly curved, is introduced, the muscle secured and brought to the surface, more or less covered by the conjunctiva, which is pushed aside as far as it will go, whilst the point of the hook is manœuvred and brought down as near as possible to the upper edge of the wound, in order that no more of the mucous membrane shall be cut than can be avoided; while he divides the muscle near its insertion with a pair of blunt-pointed scissors. A search is then made to detect any muscular fibres, or adhesions in the form of condensed areolar tissue, that may have escaped severing. Therefore the extent to which the conjunctiva is incised never exceeds more than the breadth of the muscle, and is sometimes less. One or two sutures are then put in with a needle blunted at the edges, that it might not cut itself out, at the very margin of the wound, to avoid tension, and to secure accurate adaptation. These often ulcerate within three days; if they remain longer they are removed. They do not irritate in the least degree, for they soon get sopped with mucus and lie flat; nor is the patient aware of their presence.

Now for Mr. Walton's explanation of this:—The first and chief aim of the operation, and for which the patient bargains, is to set the eye straight. The next is to prevent any sinister result, and to leave as little mark as can be of what has been done. By no method which he has practised or seen executed, in which the muscle is to be seized and divided beneath the conjunctiva, is there universal certainty of accomplishing this desirable end. In children, whenever the eye is deep set, and especially in the latter condition when the conjunctiva is thrown into folds, and the subjacent tissue thickened, and when the muscle is large and much contracted, he declares that there is great uncertainty.

Not very unfrequently, when operating in the manner advocated by him, some of the muscular fibres are not snipped, and to discover which, diligent search, he says, may be needed. Then the sub-conjunctival tissue, when thickened, forms a complication sometimes troublesome to overcome. It is liable to be taken up instead of the muscle. If these difficulties, or obstacles, present themselves under these circumstances, must they not be greater, he argues, when the operator can-

not see what he is doing. It was Guérin who proposed the subjunctival plan. (See Walton's work on "The Eye," p. 294.) It consists in leaving intact the conjunctiva just over the muscle, and cutting through the membrane, either below or above the level of the muscle, and using the instrument or instruments required for the completion of the operation beneath it. Guérin's object was to prevent the dropping of the caruncle, a defect so conspicuous when a free dissection is made in operating. Sometimes this body will, under these circumstances, disappear altogether. Mr. Walton has long pointed out that this defect may be somewhat overcome by operating close to the cornea, making a very small incision, and not interfering with the cellular sheath of the eyeball, which is pierced by the recti muscles, the tunica vaginalis oculi of Tenon. An eye so treated may not leave a trace of the operation; but when the wound is left to itself, especially if it gape and be long in healing, more or less displacement of the caruncle generally ensues. This contingency is removed by the use of sutures. With them there is a rapidity of repair formerly thought impossible in the case of mucous membranes. Nearly always there is union by the first intention, and sometimes by adhesion. Fungous growths, so common without them, never appear. In fine, by the limited operation, and the use of sutures, are secured a certainty of execution, and the greatest safeguard we can employ against eversion and prominence of the eyeball, and the preservation, as far as it is possible, of the natural outline of the surface of the eye.—*Lancet, Jan.* 16, 1858, *p.* 63.

99.—EPITHELIAL CANCER NEAR THE RIGHT EYE REMOVED BY CAUSTIC.

By Henry Thompson, Esq., Marylebone Infirmary.

[In this case the tumor was so close to the eye, that it appeared that the knife could not be used. A strong escharotic paste, consisting of strong sulphuric acid and powdered exsicated sulphate of zinc, was employed.]

The first application of the caustic paste was on the 13th of July last; the next, on the 20th. It was then continued (for six times in all) at about seven or ten days' intervals, the last being made about the 3rd or 4th of September. In order to limit carefully the action of the caustic, which formed a paste of the consistence and appearance of mortar, the parts around were first covered with a thick layer of stiff cerate. In this manner the application of the active agent could be managed with precision and nicety, and thus the margins of the eyelids, in this case, were protected:—

E. C——, aged 70; a year and a half ago she noticed what she thought to be a small wart under her right eye. It slowly increased in size; but during the last three months had increased rapidly, and become very painful. She came under Mr. Thompson's care in the middle of July last. There was then a tumour, evidently an epithelial growth, the size of a walnut, projecting beneath the external canthus of the right eye, but so closely applied to the edge of the lid that it appeared impossible to remove it by the knife without removing a portion of the lid also, and endangering the eye. Accordingly, he determined to remove it by caustic, and used the following:—A compound of the strongest sulphuric acid of commerce and exsiccated sulphate of zinc, in powder, mixed to the consistency of a thick paste. The exsiccated sulphate of zinc is the preparation used by Dr. Simpson, of Edinburgh; and has proved in the hands of many surgeons a very powerful caustic when made into a paste with glycerine. It has, however, no power to act on sound skin, which requires previously to be abraded by means of a blister. The strong sulphuric acid, on the other hand, has been employed by Velpeau and others, when made into a paste with charcoal, which is inert, and is added merely to give consistency to the mixture. It occurred to Mr. Thompson to employ the two active agents in combination—viz., to thicken the sulphuric acid with the exsiccated zinc, and thus obtain a more powerful compound, and at the same time one which required no preliminary blistering.

In the case of this woman, a thin layer of the paste had been applied six times, with the result of most completely removing the diseased mass. A month has now elapsed since the resulting wound has cicatrized, and there is no appearance

whatever of disease about the part. When using it, the surrounding parts were protected with a thick layer of cerate, which prevented the possibility of its action extending unduly. Afterwards, incisions were, on two occasions, made into the eschar to admit of the introduction of the paste beneath it. The pain during the first two or three applications was inconsiderable; but during the two latter ones it was severe. The eyes at no time implicated. Ten days subsequently to the last employment of the caustic, she had an attack of erysipelas. The woman's appearance, in all respects, exhibits that of a complete removal of the disease.

Mr. Thompson believes that the employment of caustics for the removal of cancerous growths could only be justified in exceptional cases, but that this case was, from the circumstances related, one to which that mode of treatment was especially adapted.—*Lancet, Nov.* 14, 1857, *p.* 497.

100.—*Atropine Drops.*—The formula for the atropine drops in use at the Royal Ophthalmic Hospital is two grains of the sulphate of atropine to an ounce of distilled water. This solution is mainly employed for dilating the pupil, in order to allow of better examination of the state of the eye, and also prior to needle operations. At this hospital the pupil is never dilated before the performance of extractions. Dilation of the pupil to its utmost possible extent is desirable before inspection with the ophthalmoscope. Attention to this hint will prevent disappointment, and the loss of much time to novices with the instrument. In the course of iritis, when it is deemed desirable to employ belladonna, the extract itself rubbed up with warm water, and used as a fomentation, is preferable to atropine. It should be used as warm as can be borne.—*Med. Times and Gazette, Jan.* 2, 1858, *p.* 12.

101.—*On the Fomentation of Artificial Pupil by Galvano-Cauterization.* By M. Tavignot.—M. Tavignot, after enumerating various circumstances which may render the results of the ordinary operation for artificial pupil unsatisfactory, states that he has been for some time considering the applicability of the galvanic cautery for this operation, and has succeeded in employing it. Its chief advantages are, that the new pupil may by it be established instantly, and without hemorrhage, and that its dimensions and shape can be exactly determined. Being a more simple manœuvre than the tearing through the iris, it is less likely to be followed by inflammatory consequences. Moreover, the aperture can as easily be made in the cases in which false membranes line the posterior surface of the iris, or obstruct its central portion. Thus far he only deems this procedure applicable to subjects who have already undergone the operation for cataract; as in the case of the lens being present its opacity would be induced during the application of the caustic. M. Tavignot prefers Bunsen's pile; and having made an incision at the external circumference of the cornea, he passes in the caustic-rod, directing its platinum ring to the point he wishes to influence, taking care not to cauterize the posterior surface of the cornea, nor the edges of the wound—*Moniteur des Hôpitaux*, 1857, No. 119.—*Medical Times and Gazette, Jan.* 16, 1858, *p.* 68.

102.—THE CATARACTOUS EYE COMPRESSOR: A NEW INSTRUMENT FOR FACILITATING THE EXTRACTION OF CATARACT.

By James Vose Solomon, Esq., Surgeon to the Birmingham and Midland Counties Eye Infirmary.

In the removal of hard cataract from the axis of vision by extraction, after the section of the upper half of the cornea has been completed (in the right eye), and the capsule of the lens has been sufficiently opened, the operator, in order to dislocate the cataract through the pupil, raises the upper lid with the forefinger of the left hand, and with the "curette" in his right, makes pressure with the spoon end of that instrument upon the globe, at a point about midway between the lower margin of the cornea and the insertion of the inferior rectus muscle.

It will, however, sometimes happen, notwithstanding the corneal and capsular incisions have been properly executed, that the cataract does not come forward, but slips behind the iris, or perhaps sinks more or less deeply into the vitreous humour. Under these circumstances it is usual, and a very good practice, to get an assistant to harpoon the lens with a small and sharp hook, and then gently withdraw the cataract through the pupil and the corneal incision, care being taken not to evert the flap to such an extent as shall favour an escape of the vitreous. This manipulation to be safely performed requires that it shall be executed by the steady and delicate hand of one who has been practically instructed in the operation under consideration. But such a one is not always at hand. I have therefore been led to devise and make use of the instrument here delineated. It consists of a cup of thin metal, with four elastic ribs attached to it, which fits on the end of the second finger; to the centre of the cup is rivetted a curved stem, something less than half an inch in length; this stem terminates in a transverse bar, which is concaved, and set on at such an angle as will render it easy of adaptation to the globe of the eye.

Either silver or steel may be used for the cup and ribs. Each rib should be hollowed, so as to give it strength and elasticity.

It will be obvious to those accustomed to operate for cataract, that the upper lid can be elevated and fixed with the index finger, and pressure made upon eye-ball by the second finger of the same hand, arched in front of the eye, and having attached to it "the compressor." From the trials I have made with it, I believe that in the operation of extraction the surgeon will gain by its use an equvialent to a third hand. It is less painful to the patient than Daviel's spoon. The exact amount of pressure exerted is accurately appreciated through the tactile sensibility of the end of the finger. Moreover, by placing the stem of the hook held in the right hand just behind the upper part of the incision, a useful degree of counter-pressure can be made; and should the cataract not then come forward, or should any untoward accident threaten, the hook can be used to seize the cataract at the precise moment, and in the exact mode that the operator may deem advisable. In fact, one mind will direct the whole of those manipulations, which demand skill and knowledge for their perfect execution.—*Med. Times and Gazette, Nov.* 7, 1857, *p.* 471.

103.—REPORT OF THE LIVERPOOL EYE AND EAR INFIRMARY ON CATARACT.

By Dr. J. Birkbeck Nevins, Assistant-Surgeon.

[In the following paper special attention is directed not only as to the immediate result of different methods of operation, but also as to the remote consequences.]

In looking at the reports of the Metropolitan Institutions, we find cases of cataract operated upon by extraction are reckoned by the hundred, whilst that is a mode of operating scarcely ever practised in this infirmary, the operation by displacement or solution being almost invariably adopted. Now it is acknowledged that the immediate risks in extraction are far greater than in the needle operation; but it is said that in the hands of an experienced man the results are so much more satisfactory as to place it decidedly above its more ancient rival; and I have heard of an experienced oculist in a very large ophthalmic institution, who has so uniformly adopted and seen others adopt this operation, that he has never seen that of displacement practised in a single case of hard cataract. By the advocates for extraction it is said, that the presence of the lens in the eye after displacement produces certain injurious consequences which do not manifest themselves for a long period,—it may be years,—after the patient is dismissed from the surgeon's care, and that subsequent amaurosis results from the irritation of the retina produced by the presence of a foreign body, such as a displaced lens. To this point,

therefore, I have directed special attention; and I trust it is not presumptuous to hope, that the form in which the results of the practice of this Eye Infirmary are here detailed, may stimulate some of those who have equal experience in extraction cases, to publish their results in a similar form, that the oculist and the profession generally may be able to judge which is upon the whole the most satisfactory in its results,—a point which I believe has never yet been submitted to so rigorous a test as I here propose.

To state simply that a patient operated on for cataract has been "cured," or "relieved," or "has derived no benefit," appears to me to be totally worthless; for the *cataract* may be cured, that is to say, it may have disappeared, and the pupil remain clear, and the eye free from inflammation or apparent disease, but the patient may nevertheless be totally blind from resulting amaurosis, and his own report of himself may be, that he is worse than before the operation, whilst it may be said—and in one sense with truth—that the cataract has been cured. I have therefore endeavoured to employ a test of practical value, instead of a term which is open to such misconception, and in relating the results of the cases operated on by the needle, I have divided them into classes, according to their visual powers when discharged, without reference to the presence or absence of any remains of the lens or its capsule. Thus the first class consists of patients who "can see to read," in which none have been included who have not recovered their sight so perfectly as to be able not only to read, but to pursue their ordinary avocations with ease. The next class are those who describe themselves by saying "they can see everything," and is confined to those who never could read, and therefore cannot be submitted to that test. The third class contains those who can "discern features," that is, patients who can recognise every one they see, but cannot decypher type, or see to sew or do fine work, but can follow household employments or labouring occupations. These may all be said to have regained good useful vision. The next class consists of those who "can see very imperfectly," which means that they can just see their way, so as to avoid running against obstacles. The fifth class contains those who have derived "no advantage" from the operation; and the sixth and last consists of those who are "worse than before it." With reference to these last two classes, some important points have to be taken into consideration, especially in cases of traumatic cataract.

It not unfrequently happens that amaurosis is associated with the cataract, and if the patient is blind from the first disease, the removal of the second will not restore vision. Such a patient will therefore have derived no benefit from the operation, though it may have been perfectly right to give him the chance of recovering a little sight. In many cases it is difficult even for an experienced oculist to be certain whether there is amaurosis before the cataract is removed, or not, and he will therefore give the patient the benefit of the doubt; and this is especially the case in traumatic cataract. In estimating, therefore, the result of the operation, I have given the total number of those who have received no benefit, in order that the report may be complete; and I have also given the return, deducting those who were entered in the report at the time of their admission as being amaurotic, or having the eye soft, or otherwise diseased, in order that the result of the operation upon healthy cataractic eyes may be fairly estimated.

A similar kind of qualification must be made in the cases which have been worse for the operation; but in these another disturbing circumstance comes into operation. Some of the patients recorded as "worse" did not leave the hospital worse, but better; but, in consequence of using the eye too soon, or of exposure to cold, they have returned in a few weeks with an inflammatory condition of the organ, which, in some cases, has ended in total loss of vision. I have not, however, deducted these from the list, because, although in one sense, it was not the operation which made the patient worse, yet, in another, this deterioration of the eye was a legitimate consequence of it; since the exposure would probably not have produced such destructive results had not the eye been previously operated on. I think, therefore, that in considering the probable result of the operation, we ought to make allowance for a certain amount of risk on this score, and accept it as a natural result if it does occur, instead of rejecting it, and saying

that the operation has been successful, and the subsequent injury was the patient's own fault.

Such is the mode in which I have estimated our operations; and if the advocates for extraction will lay before the profession the results of their cases in a similar manner, it will be in a position to judge more impartially and intelligently between the two methods than I believe it can do at present.

Results of the Operations.—It is necessary to state in this place, that these results only refer to cases of needle operation, whether it has been performed for the purpose of displacing a lens, or of cutting it up in order to obtain solution. The results of extraction cases will be noticed further on. One hundred and thirty-four eyes have been operated upon with the needle during the last two years, under my observation, and they have yielded the following results:

53	patients, or	39½	per cent.,	"could see to read."
20	"	14½	"	"could see everything."
21	"	15½	"	"could distinguish features."
94		69½		

That is to say, above two-thirds of the cases recovered good useful vision, and in above half it was sufficiently perfect for the most minute purposes of business or daily life. In addition to these, one in twelve gained imperfect vision; *i. e.*, they could just see their way about the house or the streets: and a single patient is recorded as "improved," but I have no more accurate account than this.

We now turn to the unfavourable cases, which bear a small proportion to the successful ones. Twenty-one patients, or 15½ per cent., had "no improvement;" but of these, 14 were entered on admission, as having amaurosis, or some disease of the globe. It was not, therefore, to be expected that they would be improved; and when they are deducted, we have a remainder of 7 patients, or 5 per cent., who derived no benefit, though they were no worse for the operation, and they had had the chance given them of obtaining some degree of vision.

The list now to be given, contains those patients who were worse at an interval of some weeks or months after the operation than before it, and of these I have records of 9; of which 3 were entered as having amaurosis, or softening, &c., previous to the operation; leaving 6 cases, or 4½ per cent., in which a favourable result might have been hoped for, but in which loss, and not benefit, was ultimately experienced.

The general results, then, of the needle operations, as detailed in this report, have been, that 70 per cent. of the cases have recovered useful or perfect sight, and 9 per cent. are able to see their way; whilst 9 per cent. who had a prospect of recovery, either derived no benefit, or were worse than before. In addition to these, 12 per cent. were operated upon in order to give them a chance, though with little prospect of benefit to begin with, and the result corresponded with the anticipation.

These results must be considered as highly satisfactory; for they show that where no fatal disease of the eyes can be recognised beforehand, in addition to the cataract, not one patient in ten fails to regain either perfect vision, or a degree of improvement from the operation; and of those who do not benefit by it, above half are no worse for it.

It also shows that not one patient in twenty who had a prospect of recovery is a loser by the operation, and that many even of those who suffer ultimate loss, might have escaped it, if they had not exercised their newly-acquired powers too soon, or exposed themselves imprudently to injurious influences.

Number of Operations Requisite.—One great objection to the needle operation, and (as I think this report will prove), the only really valid one, is the length of time requisite for cure, and the number of operations occasionally necessary. In the operation by extraction, the patient speedily knows the best or the worst that he has to look for; whilst in the needle operation the treatment may extend over months, and the necessity of repeated operations discourages the patient, and makes a demand upon his time which, in the case of an operative, is often of serious consequence. If, however, it should prove that the ultimate result of the one is decidedly more favourable than the other, there are few patients who would

not prefer the suspense of a half year, with a high probability of ultimate useful vision, to the certainty that at the end of a fortnight they will be either cured or blind for life. The following table shows the number of operations in a hundred cases, of which I have kept a detailed account:—

In 37 cases	1	operation	sufficed.	
44	„ 2	„	were requisite.	
14	„ 3	„	„	
4	„ 4	„	„	
1	„ 5	„	„	

Five is the greatest number I have yet known to be required.

It will therefore be desirable to tell a patient beforehand, that only about one case in three is cured by a single operation, and that he will be almost certain to require two; but the chances are in his favour that a third may not be necessary.

Length of Time required for Accomplishing the Solution of a Hard Cataract.—Another of the objections entertained to the operation for displacement of a hard cataract, is based upon the assumption that the lens will remain in the eye as a foreign body, and produce the injurious consequences likely to result from the presence of a foreign substance in so delicate an organ. It therefore becomes a matter not merely of curiosity, but of practical importance, to ascertain whether the lens does so remain, and produce the consequences anticipated; and also, how long it will probably be before it disappears, if it should ultimately disappear at all. The following table and remarks show the rate of solution in thirty-three cases of hard cataract which were displaced by the needle:—

In 1 case,	the lens had gone		in 11 days.	
3 „	„	„	16 to 19 days.	
1 „	"lens almost entirely gone"		in 17 days.	
5 „	lens had gone		in 2 months.	
1 „	"lens nearly gone"		in 2 months.	
3 „	lens had gone		in 3 months.	
2 „	„	„	5 „	
1 „	„	„	6 „	
6 „	„	„	12 to 18 months.	
23				

In three other cases, raising the number to 26, the lens was much reduced in size, but had not entirely disappeared at the end of three months, though there was every reason to expect that it would do so shortly. In three other cases, portions of capsule were still present, not interfering with vision; and in four, the lens was still visible to a greater or less extent, but very rarely interfering with the sight, after periods varying from ten months to seven years. It appears, therefore, that in four-fifths of the cases of hard cataract the lens is entirely dissolved within eighteen months, and in above half solution is complete within six months; whilst in several cases the lens had entirely disappeared within three weeks. And even in several cases in which solution was never perfected, the remains of the lens or capsule did not practically interfere with useful vision.

[Mackenzie says, "Displacement is only to be thought of when some insuperable objections exist to division and extraction,—chronic inflammation within the eye, dissolution of the hyaloid membrane, the amaurosis, and, I believe, the almost invariable results of a cataract of any considerable bulk continuing undissolved in the situation assigned to it by displacement." The author, speaking from experience, believes that the fear above expressed is groundless, for though it is true that an undissolved lens does operate prejudicially, yet it is so rarely that a lens does remain undissolved, that, in practice, the objection falls to the ground.]

Results of Extraction.—For these I am chiefly indebted to Mackenzie (4th edit., p. 748), as our experience of the operation derived from the infirmary is so limited, that its advocates might very properly decline to accept the inferences drawn from so small a number of cases. So far as I know, during the last ten years or more, the operation has only been performed for idiopathic cataract in two instances in the infirmary; in the first of which the eye was totally lost, after many weeks'

suffering; in the second, the operation was successful, and the patient left the hospital able to do everything except read, for which she was not tested, as being too early. I have records of 18 operations by extraction, 12 of which resulted in total loss of vision, and 6 in good sight, *i. e.*, all but one could see to read. These operations were performed by various persons, and although some of them are dead, and I have no means of ascertaining their surgical reputation whilst alive, the majority have been performed by oculists of wide and deserved celebrity, both metropolitan and provincial. When these are added to Mackenzie's list, the results are as follow:

	Perfect Sight.	Indifferent.	Failures.
La Faye	2	2	2
Poyet	2	2	3
Roux	97	10	72
List as above	6	0	12
	107	14	89

When these are reduced to per centages, to make them correspond with the results of displacement, we have—

Successful.	Indifferent.	Failures.
51 per cent.	$6\frac{1}{2}$ per cent.	$42\frac{1}{2}$ per cent.

In addition to the above, Mr. Sharp operated upon 19 cases, "in above half of which he had what he thought 'tolerable success.'" And Dr. Tartra operated in 71 cases by extraction; but as the results of 37 "were either unknown or more or less unfavourable," in addition to "6 indifferent results and 8 total failures," making 45 unknown or unfavourable results out of 70, or rather more than 64 per cent., the return is too imperfect to be worth anything for comparison. Dr. Tartra, however, did not confine his operations to extraction, but his results after displacement are almost equally uncertain with those after extraction. What he does give definitely is, that 27 per cent. of the extractions recovered perfectly, and 56 per cent. of the displacements; or two to one in favour of the latter operation, and that 9 per cent. of the extractions, and 12 per cent. of the displacements, were total failures; the extractions in this respect having the advantage.

In bringing our definite results, then, into a collected form, we find the following materials for making a comparison:—

	Successful.	Indifferent.	Failures.
Extraction	51 per cent.	$6\frac{1}{2}$	$42\frac{1}{2}$
	$57\frac{1}{2}$		
Displacement . . .	$69\frac{1}{2}$ per cent.	9	$9\frac{1}{2}$ & 12 known to be $21\frac{1}{2}$ amaurotic before operation.
	$78\frac{1}{2}$		

Such, then, is the present state of our definite materials for forming an opinion upon the respective merits of the two kinds of operation, as tested by their results; and it will be for those who are interested in Ophthalmic Surgery to consider whether extraction, rather than displacement, is, upon the whole, the best mode of removing a hard cataract.—*Liverpool Medico-Chirurgical Journal, Jan.* 1858, *p.* 98.

104.—EXTRACTION OF OPAQUE CAPSULE AFTER THE OPERATION FOR CATARACT.

[This case occurred at the Central London Ophthalmic Hospital, under the care of Mr. Haynes Walton.]

A youth, who had undergone operations for cataract, had one of the pupils obscured by opaque capsule, which was disposed in a manner difficult to be got rid of, according to the general rule of practice. It lay as a continuous membrane over the vitreous humour. Very often it is impossible to depress capsule so cir

cumstanced, as it will rise as often as pushed down. Moreover, it will spring back to the former site even when a considerable portion of the circumferential attachment has been torn through. Neither was it most favourable for being rent with two needles. The measure most suitable, according to Mr. Walton, and that at the same time the least injurious to the eye, was extraction. The incision in the cornea must always be proportionate to the body to be removed; it must be ample, but not longer than is required. Mr. Walton suspected that the short canula forceps might be used, and they were employed with effect. This elegant and scientific little instrument, of French invention, is figured in Mr. Walton's work on the Eye. The blades are brought into play by a canula, which encloses them, shutting when the canula is pushed forwards, and opening when it is withdrawn. The degree of their expansion may be graduated by allowing more or less length of blades for the canula to work over, an alteration which is provided for by the screw at the shoulder of the instrument that secures the stem of the blades. The larger and sharper blade is perforated about the centre to receive the hooked end of the other, and the surfaces, where the two come in contact, are cross-cut like common forceps. The sharp blade should be sufficiently keen to enter the cornea readily, and the lesser should have its edges so levelled that there shall not be any projecting angles, or any obtuseness to impede penetration. The great advantage of this beautiful appliance is, that it completes by itself all that is required, the aid of any other instrument being dispensed with. If properly used, the aqueous humour may generally be retained till the capsule is withdrawn, a great desideratum.

When the capsule is in too large a mass to be extracted after this method, Mr. Walton excises the cornea, with an iris knife, and often employs the blunt canula forceps—more frequently, perhaps, than any other description of forceps.—*Lancet*, *Dec.* 5, 1857, *p.* 576.

105.—ON THE SYMPTOMS OF MORBID ANATOMY AND SURGICAL TREATMENT OF GLAUCOMA.

By J. W. Hulke, Esq., Assistant Surgeon to King's College Hospital, and Medical Tutor in King's College, London.

The ophthalmoscopic signs of this disease are not generally known. They are: a dilated state of the retinal veins, often tortuous and turgid with blood; small ecchymoses scattered over the surface of the retina; occasionally small blood-clots in the vitreous humor; pulsation in the arteria centralis retinæ: and an excavated state of the optic papilla. These last two signs were, the author believes, first noticed by Graefe, who insists upon their being pathognomonic of this disease.

Morbid Anatomy of Glaucoma.—The small blood-spots which are sprinkled over the inner surface of the retina are small spots of capillary hemorrhage. This condition was first recognized in glaucoma, by actual dissection, by Mr. Bowman. The bleeding proceeds from capillaries in the inner layers of the retina, and the blood either spreads laterally amongst the elementary structures of the retina, or, bursting through the hyaloid membrane, it forms small clots in the vitreous humour. The retinal capillaries are irregularly dilated and studded with small fusiform and globular enlargements—little aneurismal pouches. These dilatations do not occur on the large vessels. The pouches and the vessels communicating with them are usually crammed full with blood corpuscles. In the hemorrhagic spots the retinal tissues are infiltrated with blood discs, which have escaped by the bursting of some of these little aneurismal pouches. Excepting the changes described above, the retinal capillaries have a healthy appearance, and do not present traces of fatty or atheromatous degeneration. The coats of the arteries are hypertrophied. The *vitreous humour* sometimes has a yellow tinge, which is derived from the colouring matter of the effused blood. It often contains blood discs and delicate fibrinous webs; and sometimes also small blood-clots, which can be clearly seen with the unaided eye. The vitreous humour has a very remarkable degree of consistence, and does not quickly fly off when the eyeball is cut across. Viewed by transmitted light, the glaucomatous lens has a yellow tint like the vitreous humour, and which is probably acquired from the same source—

viz. the colouring matter of the effused blood. The relations of the lens and the vitreous humour favour this supposition. In none of the dissections were any morbid changes found in the choroid, unless when staphylomata were present. Corresponding with the staphylomata, the choroid, retina, and sclerotica preserve their natural relations to one another, and are not separated by any effusions. The choroidal pigment is irregularly distributed; the tissues seem opened out. The subsequent changes in the retina and choroid, in the advanced stages of the disease, have an atrophic character. The dilated retinal capillaries and their contents have been found dark and granular, in a state of fatty degeneration, and the contiguous parts of the retina participate in these changes. The symptoms, the ophthalmoscopic signs, and the structural changes which take place early in the disease, all point to a state of great vascular excitement in the retina, and a greatly increased internal pressure upon the walls of the globe. It is this pressure which causes the blindness in the early stage of the disease, and the fixed dilated pupil, for when the pressure is relieved by operation, sight and mobility of the pupil return.

[Mercury and the abstraction of blood are the remedies heretofore chiefly employed in this disease; but these have failed even in the hands of their most sanguine advocates, and glaucoma remained the most intractable and hopeless of eye diseases. Dr. A. Von Graefe proposes to cure this disease by excising a portion of the iris.]

Dr. A. Von Graefe has stated his views, and described his treatment of this disease in a Memoir addressed, in July or August last, to the Institute of France, and in an elaborate article in the second part of the third volume of the "Archiv fur Ophthalmalogie," edited by Professors Arlt, Donders, and himself, and published at Berlin, October, 1857. It is very interesting to notice how he was brought, step by step, to the operation which finally gave him such success. How to lessen the excessive intra-ocular pressure was the leading idea which guided him; for he was convinced by the visible pulsation in the central artery of the retina, by the cupped state of the entrance of the optic nerve (both which he first described in this disease, of which he considers them pathognomonic), by the hardness of the eyeball, and by the other symptoms, that the tension of the globe was greatly increased, and he rightly ascribed the blindness which takes place so early in the acute form of the disease to the effects of pressure upon the retina and entrance of the optic nerve, rather than to any structural changes already taking place in these parts. How to diminish this augmented pressure, so as to restore the natural tension of the eyeball, was the problem he undertook to solve.

The whole class of evacuants, antiphlogistics, diaphoretics, diuretics, laxatives, and a mercurial course pushed even to salivation, had failed in his hands, just as had always happened to others; and this directed his attention to local measures. He first tried mydriatics, which he had found useful in the ciliary neurosis which attends corneitis and iritis: but here they failed him, probably, as he says, because little or none of the atropine he dropped in was absorbed, in consequence of the internal distension. Then he tried the well-known operation of paracentesis of the anterior chamber, and with some abatement of the symptoms, but the melioration was only temporary; and even in cases where he had at intervals repeated the operation, the results obtained were not permanent. His own observations had already made him acquainted with the influence of the formation of an artificial pupil in certain cases of partial sclerotic and corneal staphyloma. The practice has been to remove the staphyloma, and then, if possible, to make an artificial pupil if the natural one was obstructed, but Dr. A. von Graefe has reversed this order; he had first made the artificial pupil, and then had found that the staphylomata sank to the common level. (A. F. O. Bd. iii. Abth. ii. 491.) Bearing this in mind, he experimented on animals, excising portions of the iris, and found the operation was followed by a softer state of the eyeball. Supported by these facts and conjectures, he thought himself justified in performing iridectomy in glaucoma. He performed his first operation in June, 1856. The operation he recommends consists in the excision of a large portion (even a fifth or fourth) of the iris in its entire breadth from the edge of the pupil to the ciliary margin. Mr. Bowman does not (at least in chronic cases) excise more than an eighth of an inch,

but, whatever the extent, he makes an incision of corresponding length at the edge of the sclerotic in the extreme rim of the anterior chamber, with a common extraction knife, great care being taken not to wound the iris or lens. So far the operation resembles that for extraction, only a very small flap is raised at the junction of the sclerotic and cornea, but rather in the sclerotica.

Dr. A. von Graefe recommends that the portion of iris to be excised should be larger in proportion to the intensity of the symptoms and distension of the globe. Mr. Bowman has observed that much care is necessary in making the incisions; the small size of the anterior chamber consequent on the advance of the lens demands great caution in directing the point of the knife; and if the chamber is opened by a simple puncture, which is subsequently enlarged by a sawing movement, the difficulties may be increased by the immediate escape of the aqueous humour, and the knife becoming entangled in the iris, or wounding the lens before the incision has been enlarged to the desired extent. The knife, therefore, once entered, should be pushed steadily but slowly onwards, so as to cut its way out ere the escape of the aqueous humour allows the iris to fall before its point or edge. When the incision is complete, the iris bulges a little through the margins of the wound; it should now be gently drawn out with forceps, and be cut off with scissors at each angle of the wound. The result is that the pupil is at once enlarged up to the incision, which forms, as it were, the base of a *coloboma iridis*, and the edge of the lens with its suspensory ligament passing in front of the vitreous humour to the ciliary processes is exposed to view; a little blood often trickles into the chamber, and may be either removed through the incision, or allowed to remain and be absorbed.

Dr. A. von Graefe usually makes the incision at the inner side of the cornea; he thinks the situation of little importance, but says it may, if desirable for appearance sake, be made above. This last situation was chosen, and is preferred by Mr. Bowman, because, while he considers it a matter of indifference as far as regards the relief of tensions which part is excised, he believes that the cover thus given by the upper lid to the margin of the lens, which has been exposed by the removal of the iris, contributes to the perfection of vision, the central part only of the lens being usually uncovered.

The operation was introduced into England by Mr. Bowman, and first performed by him in the Moorfields Opthalmic Hospital, May 1st, 1857.

Subsequently it was taken up by Mr. Critchett, and by other members of the hospital staff. During the last six months it has been subjected to extensive trial, and I may safely affirm, has succeeded beyond expectation. Mr. Critchett believing that a less extensive excision of the iris is sufficient has modified the operation; he makes a small incision within the margin of the cornea with a broad cutting needle, draws out a portion of the iris with a blunt hook, and leaves it in the wound; or if it protrude much, he removes a portion, and leaves the remainder in the wound. Entangled in the wound it soon becomes adherent, and, after a few days have passed by, the little bead of iris shrinks away, or remains for a while as a small hernia.

The operation proposed by Dr. A. von Graefe is not very difficult to perform, and is not attended with subsequent inflammation; indeed, it may be undertaken, and often succeeds best during the active congestion of the acute form of glaucoma. The simplest treatment afterwards suffices; the lids should be closed for a few days with a small strip of plaster, and a piece of wet rag may be laid upon the eye if agreeable to the patient's sensations.

For a day or two after the operation the aqueous humour drains away, but soon the incision unites, and the anterior chamber again fills. The hardness of the globe is at once lessened, and gradually diminishes till a natural tension is attained. The pain generally at once abates and soon altogether ceases; usually there is at once a slight improvement of vision, and this goes on steadily increasing for some time. The dulness of the cornea and the diffused haziness of the humour disappear, and, in many instances at least, the iris regains its natural brightness and its functions. I mention this latter fact particularly, because statements have appeared in print, that the iris becomes atrophied after the operation. The enlarged ciliary veins decrease, and soon the eyeball resumes a more natural appearance; indeed, the artificial coloboma is the only striking tell-tale which is left; and if the excision

has been made under cover of the upper lid, even this is concealed from view. Coincident with these changes a similar improvement is going on in the deeper parts of the eyeball. The vitreous humour regains its clearness, and the ophthalmoscope shows us that the pulsation of the central artery of the retina ceases; the retinal ecchymoses, which Dr. A. von Graefe says often increase immediately after the operation, undergo absorption in the course of a few weeks; and the turgid, dilated veins regain a natural size.

The improvement is most strongly marked in the acute cases, and the more early the operation the more successful is the result obtained. I have seen patients who previously had only a faint perception of large objects, afterwards able to read; and others who had merely a perception of lights and shadows have regained a most useful amount of vision. One very remarkable circumstance is the gradual increase of the visual field to its natural limits; patients have more than once remarked, "My sight is no longer so contracted."

In chronic glaucoma, the results are not so striking as in the acute form; nor need this surprise us, for the rapid blindness which occurs in the early stage of acute glaucoma is the direct effect of pressure upon the retina, rather than the consequence of structural changes; while in chronic glaucoma, structural changes in the retina proceed, *pari passu*, with gradual increase of pressure and the diminution of sight; yet, even in those cases of chronic glaucoma in which no obvious improvement has followed the operation, it appears to arrest the progress of the disease, and to preserve to the sufferer what little sight he has left. Future experience can alone determine whether the relief is permanent. A very important question is the expediency of performing the operation in the premonitory period, which, in about three-fourths of all the cases, precedes the more urgent symptoms. The difficulty of coming to a correct solution of this question will be increased in proportion as the early symptoms are vague; but when they are strongly marked, the known undeviating course of the disease will justify us in recommending the operation even at this early period.

I have hitherto abstained from entering into any speculations as to how excision of a portion of iris can reduce the over-tension of the eye-ball: that it does so is an established fact, but the theory of the procedure is very far from clear. Dr. A. von Graefe himself conjectures that the reduction of the tension may be effected by a combination of circumstances, which comprehend the diminution of the secretory surface (of the iris), the relaxation of the tensor muscle of the choroid (ciliary muscle), and the influence which iridectomy exerts upon the circulation of the choroid.

The following we believe to be Mr. Bowman's views:—He supposes that the primary relief of the internal tension is due to the aqueous humour escaping at the time of the operation, and continuing to trickle through the puncture in diminishing quantity during the few days occupied by the healing process. During this first period the eye-ball, he says, becomes more soft than natural, and the lens remains in contact, or nearly so, with the cornea. As the wound becomes firmly united, the gap formed by the removal of the iris allows the aqueous and vitreous humour to come together (of course with the intervention of the delicate hyaloid and suspensory ligament), whereas the iris was before an effectual barrier between them, it being now clearly ascertained by the researches of Crämer, Donders, and others, that the iris is naturally applied closely to the surface of the lens, and admits no aqueous humour through the pupil—in fact, that no posterior chamber of the aqueous humour in reality exists. In glaucoma, the lens is usually forced forward, and the iris projected in front of it so as to be even more closely and firmly in contact with it than natural. Mr. Bowman conceives the result of excision of the iris probably to be, that the redundant fluid effused behind, and mingled with the vitreous humour, causing it to compress the retina, is permitted to transude into the aqueous humour, and then to escape from the eye, either by exosmose through the cornea (a road not previously open to it), or by being absorbed by the vessels distributed on the anterior surface of the iris. As this removal of the effused fluid gradually takes place, opportunity is given for progressive restoration of the aqueous humour in its natural quantity, and for the return of the lens and iris to their proper positions, while the globe acquires more firmness, without again becoming tense. As observed by Mr. Bowman, however, an eye thus treated is very apt to

lose the power of adaptation to near vision, which it may have in some degree retained in chronic glaucoma up to the time of the operation: the exercise of this power depending on an increase of the curvature of the lens in the pupillary area under the pressure of the iris on its marginal region, an action which becomes almost, if not quite impossible, when part of the iris is excised. It thus, he says, may sometimes happen that an eye which is gradually and certainly losing all sight under the advancing disease, but which under favourable conditions, and with the aid of a convex glass, retains the faculty of reading even small print within a few degrees of the axis of vision, may lose some of this power by the operation, and nevertheless obtain a much wider range of sight, and secure that range permanently by the subsidence of the morbid process consequent on the relief given to internal pressure. It is of course desirable in all cases, as pointed out by Dr. A. von Graefe, to excise as small a portion of the iris as shall suffice to secure the cessation of the disease. Future experience will probabably serve to determine how much may be necessary for this, under the varying intensity of symptoms, and at different stages of its progress.

Another explanation has been offered by Mr. Critchett, who makes a smaller incision in the cornea, a little within its margin, and leaves the iris entangled in it, by which, he says, time is allowed for the adjustment of the normal tensions, and a sort of safety-valve is left for a time, to prevent such equilibrium from being again disturbed.

Though all originality is due to Dr. A. von Graefe for the treatment of glaucoma by iridectomy, yet it is interesting to observe that the operation of paracentesis of the eyeball has been performed from very early ages; but such extreme difference of opinion has always prevailed as to the cases in which it is appropriate, and its value has been so variously estimated, that even to the present day the operation has never come into general use.

To go no farther back than Riverius, 1679, Jobus à Meekren, 1682, Antonius Nuck, 1696, we find the operation recommended, and designs are given for suitable instruments. The operation had been recommended in hypopyon, in onyx, in cases where blood was effused into the anterior chamber, and in dropsy of the eyeball; but great credit is due to Wardrop, who gave it an extensive trial, an first attempted to define the cases in which it was likely to prove useful. His observations are recorded in "Medico-Chirurgical Transactions," vol. iv. 1813; he employed puncture of the cornea in cases both of superficial and of deep-seated inflammation of the eye, and with a view to lessen fulness and congestion.

Stimulated by Wardrop's success, many other surgeons, among whom I may mention the names of Langenbeck and Walther, warmly took up the operation, but their experience did not altogether tally with Wardrop's, and the operation again fell into disuse. In our own day paracentesis of the eyeball has been recommended by no one more strongly than by Desmarres, who punctures the cornea more frequently than the sclerotica. For puncturing the cornea to let out the aqueous humour only, he prefers a needle with a shoulder or stop, which limits the distance to which the point can enter the anterior chamber; but he says if pus or lymph is to be evacuated, a large incision should be made with a knife. For puncturing the sclerotic he employs a larger needle, also provided with a stop, and grooved; he plunges this instrument through the sclerotica, a few lines distant from the margin of the cornea, between the tendons of the lower and outer recti muscles; and if a portion of the vitreous humour does not flow readily away, he passes a probe or curette along the groove of the needle into the humour, and, by breaking up the hyaloid membrane, favours its escape. In this way he treats the inflammation which sometimes follows needle operations for cataract, and he also appears to employ it in deep-seated inflammation generally. When his object is to evacuate collections of fluid, as in sub-retinal dropsy, he pierces the sclerotica further back, to avoid wounding the lens. Among English surgeons of our own day paracentesis has gained but little favour, though most persons have occasionally performed it. Mr. William Martin, Superintendent of the Calcutta Eye Infirmary, speaks highly of its beneficial action in fulness of the globe, with pain of a tensive character, and has recorded several cases in which he tried it with advantage (Indian Annals of Medical Science, and Report of Cases, &c., published Reigate, 1857). The frequency with which it often has to be repeated,

and the temporary nature of the relief which it affords, constitutes the chief objections to this operation.—*Medical Times and Gazette, Jan.* 23 *and March* 27, 1858, *pp.* 109, 316.

106.—THE NEW OPERATION FOR GLAUCOMA.

The new operation is one originated by M. GRAEFE of Berlin, and practised by him on a very extensive scale. Its principles, however, as we shall have to show, have not been wholly overlooked by former ophthalmic surgeons, though none certainly ever proposed so bold a manner for its carrying out. It has long been well known that in certain forms of ophthalmia, some chronic and others very rapid in their course, the globe coincidently with intense pain, and loss of sight, becomes very hard, its humours meanwhile undergoing a peculiar loss of translucency. In these cases it is evident that there is increased tension from increase of the fluid contents of the strongly encapsuled globe. To relieve this tension by paracentesis has long been acknowledged to be an important aim in their treatment, though now in looking back on actual practice it must be acknowledged as strange that so palpable an indication was very rarely carried out. It had, however, its strenuous advocates. Without stopping to inquire in what tissue of the eye the primary inflammation occurred, it will be sufficient for our present purpose to state that the increased tension of the whole globe was an amply abundant explanation of the loss of vision, without supposing any actual disorganization of the retina. The disease we allude to has been known, for want of a better, by the name of glaucoma, acute or chronic, as the case might be, the acute often destroying sight in a few days, the chronic requiring as many months.

Now it is in these cases that Graefe had advised the bold measure of a free incision into the eye, the evacuation of the whole of the aqueous humour, and the removal of from a fifth to a third of the iris. In explaining its good effects as due to relief of tension, we beg to be understood as offering what has appeared to English observers the most probable, not as representing its originator's views. The mode in which Graefe performs the operation is by passing a Beer's cataract knife into the sclerotic, about a line's distance from the margin of the cornea on the outer side, and having directed it forwards into the anterior chamber, cutting upwards so as to make an incision nearly half an inch in length. Through this the iris readily prolapses, or if it do not, is easily drawn by forceps, and a portion of it, varying from a fifth to a third of its whole, is cut away. The remains of the prolapsed iris is left in the wound. This is a fair description of the operation, as we have repeatedly seen it performed by Mr. Bowman, who was, we believe, the first to adopt it in this country. Mr. Bowman, however, prefers, instead of operating on the outer side of the eye, to cut obliquely upwards. This secures that a portion of the large unshapely pupil shall be concealed under the upper lid. Mr. Critchett has endeavored to carry out what he believes to be the principle of Graefe's, by a somewhat simpler procedure. He merely punctures the cornea, and draws out a portion of iris, performing, in fact, an operation for a large artificial pupil. He leaves the iris in the wound, holding that so left it secures a certain amount of draining away of the aqueous humor, acting as a sort of tent in preventing the healing of the wound.

As regard results, we believe that we may state that in cases of acute glaucoma, those for example, in which the sight has been very seriously damaged, in the course of twelve hours, or at most a few days, the operation is of the greatest possible benefit. Its introduction into practice is to be hailed the more gladly, because it is generally acknowledged that in this affection constitutional treatment is of very little avail. The only expedient really efficient for its relief formerly known was paracentesis of the globe, and of this, if not repeated at frequent intervals, the benefits, as might be expected, were too often only temporary. It did not secure a sufficient permanent escape of fluid from the over distended globe. In all the cases of acute glaucoma in which we have seen it practised, the relief to pain has been prompt and complete, whilst in most the sight has been much improved. It would appear that improvement in vision may be expected to continue for two or three weeks afterwards, when if the case have done well it becomes

stationary and permanent. Of the advantage of the operation in cases of chronic glaucoma, by far the larger class, we must speak much more cautiously. Some cases have seemed to derive benefit, others not. The matter is yet *sub judice*. Enough has, however, certainly been proved in favour of the operation to merit for it a patient trial from British Ophthalmic Surgeons. The disease, be it remembered, is one otherwise hopeless, or nearly so.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 33.

107.—*Nitrate of Silver Drops.*—One grain to the ounce of distilled water is the strength of nitrate of silver drops employed at the Moorfields Hospital. These drops are held to be an absolute specific in cases of catarrhal ophthalmia, but are very rarely used in any other form. They will cure also the purulent form, but against it the alum is equally, if not still more efficient. With these two exceptions there is scarcely a form of acute inflammation of the eye in which the surgeons to this hospital do not strongly disapprove of the use of topical stimulants. In cases of catarrhal ophthalmia, on the contrary, so marked is the effect of the nitrate that constitutional measures are hardly ever thought of. The cure is held to be likely to occupy about the same time that the disease had previously existed, the latter being much more quickly curable if it come under the proper measure in an early stage.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 35.

108.—*Alum Lotion.*—The strength of this lotion is eight grains to the ounce. It is specific against the purulent ophthalmia of infants, if properly and freely used. It is occasionally ordered in other forms of muco-purulent inflammation of the conjunctiva. A stronger alum lotion (lutio aluminis fortior) has a scruple to the ounce.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 35.

109.—*Vinegar Lotion.*—This lotion is almost exclusively employed to remove lime from the eye. Its strength is half a drachm of distilled vinegar to an ounce of water. Of course the sooner it is resorted to after the accident the better. It should also be very freely used, the lids being everted, and well washed.—*Med. Times and Gazette Jan.* 9, 1858, *p.* 35.

110.—*Lead Lotion.*—Two grains of the acetate of lead, dissolved in an ounce of distilled water, is the formula for this invaluable lotion. It may be used with the happiest effects in many forms of conjunctival inflammation in which stimulants would be injurious. Very frequently after other lotions have effected a certain amount of benefit, but their good influence appears to have ceased, the use of lead will serve a most opportune purpose. Although the importance of the accident has, we believe, been much exaggerated, yet it is of course desirable to avoid the employment of this salt in all cases in which the cornea is actually ulcerated, for fear of its deposition in the cicatrix. It is to be observed, however, that as a lotion it is not intended to be actually droppped into the eye, but only applied to the lids.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 35.

111.—ON THE ARTIFICIAL TYMPANUM.

By James Yearsley, Esq. Surgeon to the Metropolitan Ear Infirmary, &c.

[It will perhaps be known to many of our readers that Mr. Toynbee has questioned the originality of Mr. Yearsley's principle of treatment of loss of the membrana tympani, or a portion of it; Mr. Toynbee has himself, on the same principle, recommended the use of an artificial membrane composed of vulcanized india-rubber, instead of moistened cotton wool, as first used by Mr. Yearsley. Mr. Yearsley says:—]

1. I claim to have discovered a new principle of treatment applicable to cases of deafness, attended by perforation of the membrana tympani. Whatever be the material employed, whether it be cotton-wool, sheep's wool, sponge, gutta percha membrane, vulcanized india rubber membrane, a piece of bacon fat, a piece

of stick, or a piece of whipcord, each of which has been found more or less successful, this claim cannot be invalidated.

2. I claim for moistened cotton-wool a superiority over all other substances, as the best material to be used, for the following reasons: 1. It is more easily applied. 2. It is simple, safe, and cleanly. 3. It retains its proper position longer. 4. It causes no irritation, but, on the contrary, a feeling of comfort. 5. It produces no noises in the ear in the acts of eating or talking. 6. It *cures* the discharge of the ear which generally attends loss of the membrana tympani. 7. It produces the highest degree of hearing of which a patient with perforated tympanum is susceptible. With respect to the substitute of Mr. Toynbee, I speak more upon the evidence of patients than my own, for I confess to have little experience of its use, common sense having raised up in my mind insuperable objections to its adoption. Upon that evidence I affirm—1. It is *not* easily applied. 2. It is rude in its construction, rough when applied to the sensitive walls of the meatus, and unbearable in the great majority of cases to the patient. Of this Mr. Toynbee must be well aware, when he recommended that at first it should be only worn for half an hour at a time. 3. It is constantly falling out of its place. 4. It is a frequent source of irritation and annoyance to the patient, to which very few will submit. 5. It produces noises in the ear on any movement of the jaw, such as in eating or talking, which is a great source of complaint. 6. It keeps up, instead of *curing*, the discharge which attends upon cases of perforated membrana tympani. 7. Whilst all these objection obtain, I am prepared to concede that it is as capable of producing the desired effect as the wetted cotton or any other material.

3. I maintain that to be successful the orifice in the membrana tympani must neither be filled in nor completely covered by the cotton, and that an opening must be left along the walls of the meatus, down to the site of the membrana tympani. The only author who has written upon this question is Mr. Pilcher, and here is his opinion:—"In my experience, the more complete closure of an aperture in the ulcerated membrane by Mr. Toynbee's artificial membrane has not been attended with such useful results as the imperfect closure by the wetted cotton introduced by Mr. Yearsley." (P. 28, "On the Physiology of the Tympanum.") It is frequently difficult to demonstrate the fact of incomp ete closure of the perforation after the cotton is put in its proper position, though in almost every case you can, by the aid of the speculum, see that the remaining membrane is not covered; but I submit that the facts advanced in another part of this paper, added to the testimony of patients, are amply sufficient to prove that a closed cavity is not a *sine quâ non* for success.

4. I believe that the theory of the *modus operandi* is as follows:—The partial loss of the membrana tympani deprives the ossicula of their natural support and tension; the cotton-wool is so adjusted against the remaining portion of membrane as to afford the necessary support of the ossicula; and then the waves of sound break upon the cotton, cause the membrane and chain of bones to vibrate, through which the impulse is conveyed onwards to the fenestræ, to the expansion of the auditory nerve in the labyrinth, and finally to the brain. I will mention one fact in support of the non-closure theory. Many a time and oft have I, in my attempts to find the desired spot on which to place the cotton, produced the improved hearing only so long as the point of my probe was in contact with the ruptured membrane. The probe being withdrawn, the effect ceased. Now Mr. Toynbee will not venture to assert that in this manipulation I produced a closure of the cavity. I am very much inclined to think, and it is worthy of experiment, that Mr. Toynbee's patients would find his instruments as effectual *minus* the vulcanized membrane.

5. Any substance will produce the desired effect if applied so as to support the remaining portion of membrane or the ossicula, but cotton-wool is the best, for the reasons already assigned.

A small piece of wool, differing in size according to the case, and fully moistened in water, is introduced through the speculum to the bottom of the meatus, and adjusted superiorly, inferiorly, anteriorly, or posteriorly, according to the situation of the perforation, and other circumstances connected with the case; but *care must be taken* that the *entire* opening *be not covered*, otherwise the experiment will not succeed.—*Med. Times and Gazette, Dec.* 5, 1857, *p.* 575.

MIDWIFERY,

AND THE DISEASES OF WOMEN, ETC.

112.—ON THE SEVERE AND OBSTINATE FORMS OF VOMITING DURING THE LATTER MONTHS OF PREGNANCY.

By Dr. CHARLES CLAY, Author of "Results of Ovariotomy," &c., Manchester.

[In the following interesting case the patient had aborted five times in succession, and Dr. Clay was consulted on her becoming pregnant for the sixth time. By great care, recumbent position, limited exercise, close attention to the state of the bowels, with an occasional opiate when indicated by uterine excitement, the tendency to abort was controlled beyond the period at which it had originally occurred previously, namely, to about the seventh month. At this period severe and incessant vomiting came on immediately after taking any food or drink. Every variety of food and drink was tried, together with recumbent position, little or no exercise, mild aperients and opiates when necessary, and the *materia medica* was ransacked for some remedy to afford relief, but in vain. The only exception was common carbon, magnes. grs. vi. vel viij., in as many fluid ounces of dill water, a table-spoonful taken frequently, and the relief from this was very transient. At last the patient was so reduced that the induction of premature labour became absolutely necessary.]

I introduced my finger with the view of guiding an instrument to rupture the membranes and induce premature labour, when I found, on touching the os and cervix uteri, great tenderness and pain—so much so, that the slightest pressure almost instantly produced violent efforts of vomiting. At this discovery, it struck me as advisable, before inducing premature labour, to try the effect of lying quite prostrate on the back, with the head very low and hips considerably raised, and taking very small portions of food at considerable intervals, such as concentrated beef-tea, &c. By constantly enjoining this position, I found the disposition to vomit much less, and about twenty-four hours after small portions of food were retained. Encouraged by this success, and my patient having now reached the completion of the eighth month, I felt it my duty to advise a strict perseverance in maintaining this position, and so long as it was followed the sickness gradually abated, and ultimately entirely left; food was retained on the stomach, and my patient gradually gained strength. But up to the full gestative period (which she most fortunately accomplished), the slightest attempt to resume the upright position at any time, or even sitting up in bed, was almost immediately followed by violent retching and distressing vomiting. Thus, for the last month, my patient was kept almost constantly on her back, with her head low and hips raised; by which means the os and cervix were relieved from the pressure to which they had been subject in the upright position. Little or no medicine was given during this time; the acidity and flatulent eructations ceased altogether before the time of labour, which took place on the 26th of January, 1856, at the full period of gestation. She was safely and easily delivered of a male child. The process was perfectly natural, but the pains somewhat severe; there was, however, no peculiarity worth notice. She recovered rapidly, soon gained her usual strength, and ultimately did extremely well; indeed, few cases of so obstinate a character terminate as satisfactorily as this.

[Dr. Clay relates a second case which ended fatally. The following is his third case]:

Subsequently to the two cases just narrated, I was consulted by the medical attendant of a lady under very similar circumstances in almost every particular; and on the prominent fact being ascertained that the os and cervex uteri were extremely tender, and painful to the touch, causing the same disturbance and aggravation of symptoms as in the two former cases, I at once recommended four or five leeches to be applied, by means of a speculum, to the turgid os and cervix uteri; at the same time rigidly enforcing the position of lying on the back, as before described, with small portions of concentrated food at long intervals. These applications, though very simple, had the desired effect of immediately relieving the distressing symptoms; and in a few days the lady was so much improved in every respect that she was anxious to assume the upright position, or at least to sit up in bed. This, however, I could not consent to (knowing the liability of such symptoms to relapse), without first ascertaining if any tenderness remained at the os and cervix. Finding, on examination, some tenderness still remaining, though pressure did not now excite vomiting, I advised four more leeches, and to continue the position a few days longer. This had the desired effect; and in about a fortnight from the first application of the leeches, she was entirely free from every distressing symptom, and pursued her household duties without any inconvenience. She progressed most favourably to the full period of gestation, at which time she was safely delivered; both mother and child ultimately did extremely well.

Observations.—From the peculiarities presented in these cases we may derive considerable interest and valuable instruction, more particularly as they are such as are very likely to occur to any practitioner. I feel convinced that there is pretty generally, if not always, considerable congestive inflammation and great tenderness about the os and cervix uteri which are best treated by local bleeding at the seat of mischief. That the irritable state of the stomach is purely symptomatic of that condition of the os and cervix uteri (that is) in these obstinate cases of the latter months. That these cases differ widely from, and must not be confounded with, those of nausea and sickness of the early months, however severe; and where the stomach itself particularly, and in some measure the entire digestive functions are much deranged; and attention to the condition of the stomach will, in most, if not in all cases, be remedied by medicine and diet. That diet or medicine have little or no effect in the severer cases above described, *in the latter months;* but that a position of the body calculated to relieve the os and cervix from pressure against the pelvis viscera, is best accomplished by lying on the back with the hips raised and head low, with food in very small quantities given at long intervals. *Lastly*, and mainly, I rely on the application of a few leeches, applied through the speculum, direct to the os and cervix uteri, the seat of congestive inflammation, and consequently the cause of general irritation and sympathetic action of the stomach and its consequences. The leeches are to be repeated if any tenderness remains, and the position strictly observed until the symptoms are entirely conquered. I do not say that this plan would succeed in all cases; but where medicine and diet alone have done so little, means so simple and, I believe, so effective, should not be altogether lost sight of; more particularly because if I am right that the condition of the stomach is purely sympathetic of the congested state of the os and cervix uteri, it is perfectly useless to trouble the patient with medicines, as they only add to instead of diminish the severity of the symptoms.

This peculiar condition of the os and cervix is not often noticed in the *post-mortem* examination of cases ending fatally; and this because death is mostly preceded by premature labour, and the loss of blood consequent on that alters the condition of the os so much as easily to escape detection. There are, I believe, some few cases recorded where another and very different peculiarity exists; that is, when the attacks of vomiting come on when the patient is laid down, consequently most frequently in bed; such a condition is, however, extremely rare, and could not arise from any congestion of the uterine structure at or near the fundus uteri. I had a case or two some years ago of this description which had this character, as no tenderness was discovered at the os, but great pain and tenderness were found on the slightest pressure on the fundus uteri, accompanied by an aggravation of symptoms whenever the test of pressure was applied: these cases

were soon relieved by stupes of warm turpentine and water, and the loss of a few ounces of blood from the arm.

The cases here recorded serve to show the obstinate character of the malady; that little relief is to be expected from medicine or diet; that the seat of mischief is not, as it has generally been conceived, at the stomach, but at the os and cervix; the stomach merely acting sympathetically, whilst the condition of the uterine structure at the os is that of congestive inflammation.

If my views are corrrect they are sufficiently explanatory why so little good has ever been effected by medicine in these obstinate cases; and also explain the fact of no apparent cause discoverable after death to account for the severe symptoms during life beyond the sinking from mere starvation. In such cases nature herself seems to me to indicate the seat of mischief, and suggests the proper remedy by exciting the stomach to sympathetic action, *that very act alone* controlling in some measure the progress of the inflammatory attack, and preventing the local from becoming general inflammation; and, lastly, by premature labour occurring spontaneously, *if not artificially* induced.

The treatment of such cases has hitherto been so contradictory and unsatisfactory as to justify the opinion that the real cause has not been sufficiently attended to, consequently there can be no impropriety in directing attention to a plan of procedure that is apparently based on reasonable grounds. The cases related were similar in all their leading features, and the treatment of the last would in all probablility have succeeded in the fatal case if adopted in sufficient time; local bleeding suggests itself to me as the most probable means of relief we have at command, but that must be assisted by causing as little pressure on the part suffering from congestive inflammation as possible, and this can only be done by lying on the back as directed, and keeping the stomach as empty as possible for a considerable time. General bleeding cannot be so effective as when the congested part can be reached directly by leeches, but in cases where some other portion of uterine structure suffers, and which cannot be so reached, then, general bleeding must be resorted to. Drastic, particularly aloetic purges, are inadmissible, and rather increase than lessen the mischief.

I give these observations and cases in the hope of eliciting information from others. My mode of treatment is embodied in the third case, and if it is found to be based on sound principles and proves to be the means of saving life, I shall feel amply gratified.—*Midland Med. Journal, Vol. I., p.* 195.

113.—*On the Utility of Chloroform in Turning.* By Dr. J. M. Winn, Physician-Accoucheur to the West London Dispensary, &c.—Several months since I was requested to consult with Mr. —— on one of the most aggravated cases of shoulder presentation I ever witnessed. During ineffective efforts to turn he had brought both arms into the vagina, and the uterus had contracted so violently upon the child that I found it utterly impossible to introduce my hand. Had I persisted in my attempts to do so by manual force alone, I felt confident that the womb would have been ruptured. The patient was a middle-aged woman who had borne many children, and had been subject to epilepsy in her childhood. Although she was much exhausted when I was called in to see her, and various remedies had been used to overcome the spasmodic action of the uterus, this organ maintained its preternatural and vice-like contractility without a moment's intermission. Under these circumstances I resolved to place her fully under the influence of chloroform, and it was not until she was completely overpowered by the anæsthenic effect of this agent that the spasmodic action of the womb subsided. As soon as the relaxation was complete, I introduced my hand, and easily turned the child.

In administering chloroform it must not be forgotten that its effects are often cumulative, and some individuals are peculiarly susceptible to its influence. In the above case the patient was a considerable period before she recovered from its effects, and, at one time, I entertained fears for her recovery. Although I highly deprecate its indiscriminate use in natural labours, I consider it of great service in the management of many cases. In employing chloroform it must not be forgot-

ten that it paralyses the excito-motor nerves of the uterus, as well as those which supply the abdominal muscles with voluntary power. Its use is, therefore, clearly contra-indicated in cases where expulsive power is required. To lull hysterical excitement, to allay *morbid* pain (by which I mean, *excessive* pain as it occurs in morbidly sensitive females), to suspend convulsions, to relax the passages, and to blunt pain during severe operations, are the principal indications for its use.—*Lancet, Dec.* 12, 1857, *p.* 598.

114.—CASE OF PUERPERAL COMA.

By Dr. J. M. Winn, Physician-Accoucheur to the West London Dispensary, &c.

A middle aged stout multipara was seized suddenly after her last confinement with loss of consciousness; the labour was natural and had not been preceded nor followed by convulsions. The friends, imagining the case to be one of apoplexy, were much alarmed, and sent for me in great haste. I found her in a condition closely resembling that induced by pressure on the brain. She was in a perfectly unconscious state, from which no impression made on the senses could rouse her. As the breathing, however, was not stertorous, the heart not much depressed, and the countenance tranquil, I was induced to refer the affection to a class of phenomena which I have termed puerperal coma, to prevent its being confounded with puerperal apoplexy, a disease of infinitely graver importance, and for which a totally different treatment is required. In the above instance, I was glad to have it in my power to assure the relatives of my patient that the complaint would in all probability terminate safely. The only remedies employed were a mercurial aperient, an ammonia draught every four hours, and the frequent administration of small quantities of fluid nourishment. The result justified my diagnosis: on the following day the comatose state had passed away, and the patient was free from any alarming symptoms.

This affection, in most cases, appears to owe its origin to one or more of the following causes: nervous shock, a loaded portal system, uterine hemorrhage, and the too-frequent administration of cordials and narcotics. A variety of this disorder frequently ensues after convulsions, and which I shall illustrate by a case I saw in consultation with Mr. Charles King, of the City-road.

The patient, a short-necked but not robust young woman, aged 23, was attacked, nine hours after the commencement of her first labour, with violent convulsions, which recurred with little intermission during a period of about five hours. As the os uteri was dilated to the size of a crown piece, it was determined to deliver her as speedily as possible, and, at the same time, by those means which are least likely to irritate the lining membrane of the uterus. After abstracting a small quantity of blood, which had not the slightest effect in allaying the convulsions, we delivered her by craniotomy. After the extraction of the child the convulsions gradually subsided, but a state of profound coma supervened which continued during a space of two days and a half. For this symptom the mildest remedies alone were had recourse to, such as were employed in the case to which I have previously alluded. I subsequently heard from Mr. King that his patient perfectly recovered.

I cannot help expressing a strong belief that if many of the cases of this description were treated less heroically and by a calmer mode of procedure, the results would be more successful.—*Lancet, Dec.* 12, 1857, *p.* 597.

115.—*Post-Partum Hemorrhage.* By Thos. Elliott, Esq., Carlisle.—[The author strongly recommends the following plan of treatment with a view of inducing uterine contraction, it being, in his experience, an "unfailing remedy."]

It consists of an injection into the rectum of 4 oz. of turpentine, 4 oz. of cold water, and a handful of common salt, forcibly retained by means of a folded napkin firmly pressed against the anus, until violent bearing down or tenesmus is induced. The object is, *first*, to produce continuous reflex action; an action that will last sufficiently long to prevent all risk from relaxation of the womb, since

the bearing down of the gut will be necessarily accompanied by the contraction of the womb. *Secondly*, as turpentine, by its stimulating properties, acts as a powerful restorative to the whole system, it becomes a matter of the greatest importance, in the selection of the agent chosen for the purpose of inducing reflex action, to make use of one possessing such properties. *Thirdly*, the anti-hemorrhagic properties of turpentine may possibly also prove useful.—*Med. Times and Gazette, Feb.* 6, 1858, *p.* 148.

116.—ON THE TREATMENT OF UTERINE HEMORRHAGE.

By John Higginbottom, Esq., F.R.S., Nottingham.

For the first twenty-five or thirty years of my professional life I had a very extensive midwifery practice, consequently many cases of uterine hemorrhage, and some of them which caused me intense anxiety of mind for the safety of the patient. The first seventeen years of my practice I was in the habit of following the example of my medical brethren in giving, as a medicine, alcohol in the form of port wine and brandy, and the tincture of opium. The tincture of opium—a valuable remedy—was given in proper doses; but the wine and brandy were administered according to the degree of hemorrhage and consequent depression, often with little attention to either the quality or the quantity of the intoxicating fluid, depending on the law of tolerance for safety in such cases.

In these terrific cases, along with the stimulants, were used every local application, as cold water, ice, pressure on the uterus, &c., to cause contraction of the organ. Under such treatment the patient would rally a little; but very soon the sinking pulse, the blanched face, and white lips, would indicate the necessity of more wine or brandy, which was immediately given, very soon to be followed by an increased flooding and consequent lowness. This alternate state of reviving and sinking has continued for several hours, when the stomach has become so much distended and irritated by the stimulants and other fluids given as to produce a full vomiting of the contents of the stomach; after this the hemorrhage has ceased, the patient has gradually recovered, and required nothing more than a little gruel or tea. This happy termination by vomiting does not always take place, but the wine and brandy have been given in such quantities as thoroughly to narcotize the patient; she becomes insensible and comatose, and cannot be roused, and death takes place. Alcohol has caused her death; not the hemorrhage. The following is a case in point:—

In June, 1823, I attended Mrs. M——, in labour; she was of a stout, plethoric habit of body; she had after delivery a very profuse flooding. The usual stimulants of wine and brandy and also opium, were given her, and the customary local applications were resorted to, with very little effect. Her friends became alarmed for her safety and called in an old physician without my knowledge, who immediately was dissatisfied with the brandy. He said it was not strong enough, it having been procured from a neighbouring public-house. More brandy, supposed to be of better quality, was procured and given to the patient. The quantity administered was thought quite requisite to keep up the sinking powers of the patient; insensibility and coma ensued, breathing became heavy and laborious, and in about two hours after her delivery she died. The stomach in this instance unfortunately retained its contents; her only safety would have been a full vomiting of the contents of the stomach. In this instance I have always been of opinion that she died from alcoholic poisoning, and not from the hemorrhage.

The following case will show the value of vomiting in a similar case, and which led me to the disuse of alcoholic stimulants in cases of flooding:—

Mrs. G——, a delicate female, about thirty years of age. I had attended her twice in labour in the years 1821 and 23, each time she had severe flooding directly after the separation of the placenta. I employed the usual local applications, and administered wine and brandy and tincture of opium. These cases were attended with great anxiety, and I had to remain with my patient several hours before I could leave her with safety.

On her third labour, in the year 1826, I was afraid she would die, after having used all my remedies, and having given her a pint of port wine, and half a pint of

brandy, during the three hours after the birth of the child, which proved of no avail, it occurred to me that in both the former times in which I attended her, when I had used similar means to check the hemorrhage, that there was no amendment until she had ejected the contents of the stomach. I was then most anxious that vomiting might take place in hope of relief, as she was rapidly sinking. I thought as vomiting had been so beneficial to her in the former instances, that I was in this case justified in procuring it by giving an emetic. I directly gave her an emetic dose of ipecacuanha; a full vomiting soon succeeded, and a large quantity of fluid was ejected. I was much struck with an expression of my patient, which I had several times before heard in similar cases after vomiting—"Oh, I'm better: I'm better now!" The hemorrhage ceased directly, and did not return, the symptoms of sinking abated, and the patient appeared soon in her usual state of body, but very feeble; a little plain gruel was all the nutriment given her, and she recovered gradually from the weak state.

I attended the same patient three times afterwards, in the years 1827, 1829, and 1831, and, what is very satisfactory in favour of the secale cornutum, which was about that time coming into use in this locality, I gave her in every case half a drachm of the powder before the birth of the child, a second dose before the separation of the placenta. This remedy had the desired effect of preventing the hemorrhage, so that I had no further need of the ipecacuanha, or indeed any other remedy.

I have attended patients since that time, when the secale had no effect in checking the flooding, both in my own practice, and in consultation; and I have resorted to the ipecacuanha emetic, when other means have failed, and with immediate success.

For more than thirty years I have lost all confidence in the diffusible stimulants, such as wine, brandy, &c., in uterine hemorrhage, from a conviction that they increase the arterial circulation, and consequently the hemorrhage. The common practice of giving the patient a little cold water, or vinegar and water, to drink, and keeping the body in a cool state by means of a well-ventilated, cool room, are more likely to restrain the hemorrhage, and thus preserve the strength of the patient.

The ipecacuanha emetic, in half-drachm doses, I consider a perfectly safe remedy, which may be used in any case of severe flooding, but I have hitherto given it as a *dernier ressort*. I have found the secale cornutum, *if good*, to answer in most cases. In other cases, I have given a drachm of the tincture of opium with decided benefit: if not fully relieved, in half an hour, half a drachm more, but I have had very rarely to repeat the remedy a third time; the tincture of opium has the effect of checking the hemorrhage, and also of removing the pain.—*Lancet, March* 6, 1858, *p.* 237.

117.—OPIUM IN UTERINE HEMORRHAGE.

By John Gabb, Esq., Bewdley.

[Opium has a very different effect as it is given in large or moderate doses.]

Considering the physiological action of the drug as described in "Pereira" and other works on Materia Medica, it appears likely to be useful, or the contrary, in diminishing hemorrhage according to the dose in which it is administered; *a very full dose* being likely enough to produce relaxation, whilst a moderate dose, without doubt, produces contraction of the uterus. Many persons have given cases with a view of showing the relaxing effect of opium on the uterus, when administered in *full doses*. The following case, though not one of uterine hemorrhage, very well illustrates the stimulant action of the same medicine when given in moderate doses. Two years ago, I was requested to attend Mrs. A. in her confinement with her first child, she being in the 43rd year of her age; of course I expected a tedious labour. She lived in the country, and I was obliged to remain with her forty-eight hours before the labour was completed. She had suffered much for many hours; the liquor amnii had escaped—the os uteri was not completely dilated—she had taken sufficient nourishment to prevent exhaustion from want of food, chiefly gruel and toast and tea. No progress had been made. The

pains, though severe, were badly borne and inefficient, when I administered what I considered the best stimulant—viz. about 25 drops of laudanum in a little water. The effect was much better than I even expected. The pains became almost directly more powerful and expulsive, the os uteri rapidly disappeared from the reach of the finger, and the head soon began to press upon the perinæum. More than twelve hours afterwards, the case was exactly in the same condition with regard to the perinæum as it had been before with regard to the os uteri. The pains continued to be severe, but ceased to have any expulsive action; the pulse quickened, and other signs of exhaustion began to appear. I repeated the laudanum in the same dose as before, having the forceps in reserve, in case the opium should have no effect. In about ten minutes the stimulant effect of the medicine began to show itself, the pains soon again became powerful and expulsive, and with the aid of pressure on the fundus of the uterus with the hand during each, in about half an hour the head was born. Another pain expelled the child, another the placenta; the uterus contracted firmly, and everything went on well. Mrs. A. was up and in her sitting room within a week,—without leave, for I thought it too soon,—but no harm followed.

Of course opium will not produce uterine contraction under all circumstances. It is only in cases of deficient power from exhaustion or fatigue that it is likely to act beneficially; and I may mention that inertia of the uterus is a condition particularly requiring its administration in moderate doses; for, at the same time that it produces contraction, it prevents the effects of the loss of blood. The above, though the real effect of opium in moderate doses, may appear strange at first sight. But how frequently must every practitioner have observed the suspended action of the uterus in consequence of the hasty and improper administration of brandy and other stimulants, by nurses and midwives! the effect is of every-day occurrence.—*Med. Times and Gazette, Feb.* 13, 1858, *p.* 178.

118.—*On the Utility of Galvanism in Accidental Hemorrhage.*—By J. S. Stafford, Esq., Senior Resident-Surgeon to the Lying-in Hospital, Birmingham.—On Wednesday, October 27th, at 10 A.M., I was called in by one of my colleagues to see a patient of his, who had summoned him, supposing herself to be in labour. On arriving at the house, I found her flooding most profusely, and reduced to a state of great exhaustion, and quite pulseless. I made an examination, and discovered the os uteri dilated to about the size of a crown piece, and very rigid, the membranes having ruptured some hours previously, uterine pains being entirely absent. I was satisfied, from being able to sweep my finger round without detecting the placenta, that it was a case of accidental hemorrhage. My colleague informed me that he had given *two* doses of *ergot* without inducing any uterine contractions.

I determined to test the value of galvanism, and was absent from the house some time, in order to procure a machine, and, by means of a magnetico-galvanic apparatus, applied a series of shocks to the abdominal parietes over the uterus. In a few minutes I was gratified to find that powerful contractions were being set up; the head gradually descended sufficiently low to admit of my applying the forceps, and thus labour in a patient almost moribund was brought to a successful termination. The placenta was detached almost immediately, and after its extraction the uterus remained firmly contracted. No further hemorrhage occurred. The patient, under the exhibition of stimuli and opiates, has progressed favourably. During the application of galvanism she made no complaints that the shocks caused her pain, neither was she sensible of the continuous contractions of the uterus.

I have sent a brief account of this case to show that galvanism, in cases of excessive accidental hemorrhage, may be of service, and should, to say the least, have a fair trial. The surgeon should be satisfied that he is the possessor of an efficient apparatus, otherwise he may attach blame to the galvanism instead of to the faulty machine.—*Lancet, Dec.* 19, *p.* 626.

119.—ON OBSTINATE MENORRHAGIA.

By Henry Savage, Senior Physician to the Samaritan Hospital for Women.

Uterine Hemorrhage, unconnected with pregnancy or parturition, occasionally assumes a rebellious form not to be understood by the ordinary doctrinal explanations of its pathology. Menorrhagias (or rather metrorhagias) are said to be active, passive, functional, or symptomatic, according as they are considered to depend on general vascular derangement, on diathesis, or on morbid states of the womb itself. The remedies most useful are such as correspond with these views. Thus cooling purgatives, drastics, antimonials, bleeding, astringents, have each had their advocates. The same may be said of the series of special anti-menorrhagics —bitartrate of potash, oxide of silver, Indian hemp, digitalis, Cayenne pepper, cinnamon, &c., and of the removal from the womb itself of some tangible exciting cause, as polypus in one or other of its innumerable varieties.

The majority of menorrhagias yield to one or other of the above remedies; but some do not. The two following cases, selected from a large number which have come under my notice at the Samaritan Hospital during the last four years, in my opinion, are instructive examples of this intractable class:—

Case 1.—A woman, aged 36, married, came to the hospital two years and a half ago, having the ordinary appearance of females subject to the loss of blood. She was extremely pale, she said she was weak, felt low-spirited, and had at last become unequal to her domestic duties, which were far from laborious; she had but two children, and had experienced no privation; she had never noticed any irregularity in the catamenial function till six months after her last confinement, having always felt well till then. On the reappearance of the catamenia at that period, she lost a great deal of blood. This discharge lasted for three weeks. After a week's interval it again appeared, increasing until about the right catamenial period, according to her calculation, and subsiding gradually to the interval of a week as before, and so continuing ever since, reversing, as it were, the ordinary rule, she having but one week's interval instead of three. A letter from her medical attendant states that this has been going on for eight months. He had tried all the usual remedies without success. A polypus was suspected, but not found. I examined her carefully several times, failing also to find anything more than slight enlargement of the uterus, which had a soft feel, with the os perhaps slightly more open than common. Cold hip-baths, oxide of silver, Indian hemp, &c., were tried for a month. They made but a temporary impression. The interval of cessation extended to a fortnight; but the total amount of loss was still far too great. The uterus was now injected daily with a strong solution of tanin and alum; from four to eight ounces of this was thrown into the cavity of the womb in a continuous or rather forcible stream through a full-sized male catheter, cut off at the end—the os having been previously well dilated by a sponge-tent to insure free retrogression of the fluid. Internal remedies were discontinued. The hemorrhage now rapidly subsided. At the end of a fortnight it had nearly disappeared. At the end of another month I yielded to her anxiety to return home, and she left the hospital much improved in health and appearance, but the discharge was not quite gone.

The injection from first to last had caused her no pain whatever. She mentioned occasionally only a slight sensation of "drawing and coldness," but not by way of complaint.

In about four months she again came to the hospital. The hemorrhage had begun to increase about two months after she left it. She said she was about the same as at first, and her look corresponded with the statement. Another selection of anti-menorrhagics was tried; they failed as before. Recourse was again had to the tannin and alum injection (tannin, two drachms; alum, four drachms; water, six ounces). The catamenial interval again quickly extended to a fortnight, and once to three weeks. She remained in the hospital three months. The decrease in quantity seemed to justify my yielding once more to her wish to go home, and agreeing to her supposition that the change would complete the cure. However, in about four months she made her appearance "as bad as ever," so I determined on the following plan:—

A careful examination was again gone through. The uterus felt fuller and softer, and the os more open than natural. The finger could be introduced a little way into the os, but no peculiar soft, pulpy, or vegetating unevenness could be distinguished. The uterine sound showed that the cavity was larger than natural; in fact, the instrument could be easily turned on its curve without much displacement of the uterus. No hitch or obstruction whatever indicated a polypoid excrescence of any magnitude. The sound, when withdrawn, was covered with blood, which seemed to flow more abundantly in consequence of the disturbance caused by the uterine sound; but this increase lasted only half an hour after the examination was concluded. Not the least pain was caused by any part of the examination.

A large sponge-tent, two inches and a half long, was introduced to its whole length. A still larger was employed the day following. On the third day the os uteri would easily admit two fingers. The patient was then laid upon her back, the legs raised, the hips well supported; in short, placed as in the operation of lithotomy. With Recamier's curette (the larger end of which passed into the cavity of the womb with the utmost facility) I proceeded to scrape with force enough to remove any possible vegetation or fungosity which I considered it a fair presumption to regard as a very probable cause of hemorrhage so inveterate. The operation lasted about six minutes. In that time (the curette being of the largest size) I believe I had completely gone over the entire internal surface of the uterus and its neck. Wherever I felt, through the instrument, a sensation as if it was passing over a velvety surface, there I continued scraping until the surface gave the impression of being comparatively smooth and hard. The patient was asked frequently if the operation gave her pain; but she said she felt none whatever. I constantly withdrew and examined the curette, expecting to see a large collection of vegetations or accumulations of the soft surface I seemed to be scraping off, but the amount altogether did not, by a third, cover the cavity of its spoon-shaped end: much more, however, of a jelly-like, white, tough, transparent mucus came away. The patient was put to bed. The hemorrhage for the first half hour slightly increased. It then began decidedly so to diminish that it was not considered necessary to resort to any of the means provided for the opposite contingency. The next day the hemorrhage was still less, and I thought I could feel that the uterus was smaller. She had passed a good night, and said she felt better and was in no pain. With the view of more effectually destroying the polypoid vegetations, the idea of which the result of the operation seemed to me to confirm, I injected three drachms of the tincture of iodine, of the London Pharmacopœia, into the uterine cavity. The effect was almost magical; the hemorrhage seemed to stop at once. The day following it was almost gone. Two injections of three drachms of the same tincture were used at intervals of three days. Beyond a sensation of warmth, the patient declared she felt nothing; and on this occasion she left the hospital six weeks after admission. All discharge had ceased for three weeks previously. The womb was clearly much less in size, and the os had closed to its natural dimensions.

I met this patient accidentally in the street a few days ago, nine months after she last left the hospital. She assured me that ever since the operation her catamenial periods had been perfectly natural. She was walking briskly, and looked in excellent health.

Case 2.—A woman, thirty four years of age, thin, spare, pallid, nervous, and debilitated, came to the hospital a year ago, complaining of excessive loss of blood at the catamenial periods, which had lasted at least a fortnight at a time during the past two years. The complaint had come on after a miscarriage a year previously. The uterus could be felt soft, larger than natural, and the os open, but not sufficiently so as to admit the finger. The os uteri was dilated by a succession of sponge-tents, but I thought in this case I would try the iodine injection alone. Accordingly, four ounces of a mixture of tincture of iodine and water (equal parts) was injected with some force, in the usual way, into the uterus. The nervous and excitable temperament of this patient, as I anticipated, betrayed some intolerance of such a proceeding. She complained of pain in both groins for some hours afterwards. The next day the hemorrhage was greatly diminished. The same injection was repeated every third day for a fortnight. The uterus now

began evidently to return to its right size, and the os to close. She left the hospital two months after her admission. Her health improved rapidly from the first use of the iodine injection.

In this case most of the anti-menorrhagics best esteemed had been administered without any advantage.

The above two cases are types of a vast number of menorrhagics I have treated on a principle involving more or less the supposition that some unnatural condition of the lining membrane of the uterus existed. Injections as mere astringents were used, by Blundell amongst others, years ago. Dr. Locock's gouge, Recamier's curette, Jobert's uterine speculum, Simpson's looped scraper, recognise the same thing,—viz., the possible existence of wonderfully small polypi as the real cause of dangerous uterine hemorrhage; but I am not aware that iodine has ever yet been employed for the same object. Injections of the uterine cavity are regarded by the profession in general as full of danger, and I am not prepared to say they are not so, unless care be taken to secure an unobstructed escape for the fluid by previous ample artificial dilatation of the os and cervix uteri. With this proviso, I have never seen any ill effects from uterine injections; and of all the various solutions I have used and seen used for years past, I have never met with one so satisfactory and so free from objection as the tincture of iodine.

It is also worth while, I think, to direct attention to a point in the *rationale* of uterine hemorrhage exemplified by the use of any means tending to empty the uterine cavity, or otherwise lead to a return to its healthy size and tone. In both the above cases, as well as in all the rest I have met with, the slow contraction of the uterus seemed to keep pace with the diminution of the discharge. I have often seen brought on unintentionally a smart metrorrhagia by the introduction of a sponge-tent of the smallest size, which only ceased on the removal of the tent.—*Lancet, Dec.* 5. 1857, *p.* 570.

120.—*Iodide of Potassium in Leucorrhœa.*—Dr. Payne recommends the iodide of potassium as an injection in leucorrhœa. It is to be used (ʒ 1½ to a pint of water,) 3 or 4 times daily.—*American Med. Journal.—Med. Times and Gazette, Feb.* 13, 1858, *p.* 175.

121.—GASTROTOMY: REMOVAL OF FIBROUS TUMOUR OF UTERUS.

By Dr. John Sloane, House Surgeon to the Leicester Infirmary.

The presence of an ovarian tumour on the left side was first detected about three years before the operation detailed below, by Mr. Eddison, of Nottingham. Pulse was 112, very feeble; urine scanty; specific gravity 1013; in other respects normal. The other organs appeared healthy.]

The tumour was believed to be ovarian; and, after two consultations of the surgeons of the Hospital, it was decided to remove it. The patient herself was very anxious to have the operation performed, after she was made acquainted with the dangers she incurred.

Her ward, which contained only two beds, one of which was not occupied, was heated to 70° Fah.; and this degree of temperature was kept up for two days. At 11 A.M., she was removed to an operating-table, placed at her bedside, and, while she was under the influence of chloroform, an incision was made in the mesial line from the umbilicus to the pubes. A considerable quantity of serum escaped, and there was rather profuse hemorrhage. Some old and firm adhesions between the tumour and the abdominal wall were broken up, and several cysts containing serum in the diseased mass were opened to lessen its size, before it could be extracted. The peduncle, nearly circular, was about one inch and a half in diameter. It was perforated by a needle carrying strong whipcord, which was divided, and the four ends were tightly tied. It was then divided between the ligature and the tumour, close to the latter. The edges of the incision in the abdominal walls were drawn together by interrupted suture; compresses were applied; and pressure was kept up by a very broad flannel bandage. During the process of the operation, constant pressure was made on the abdomen by an assistant; yet she appeared to be on the very verge of syncope. After being placed in bed, she gradually rallied for some time, but still continued in a very depressed state. Bottles of hot

water were applied to her extremities; and some brandy, beef-tea, etc., were cautiously but assiduously administered. She died about 4 o'clock, five hours after the commencement of the operation.

On dissection, seventeen hours after death, very little serum was found in the abdomen, and no blood. There was diffused florid redness of the peritoneum anteriorly. This membrane was lacerated extensively in several places, where adhesions had existed; and the fold reflected from the uterus to the rectum was torn. The divided peduncle was attached to the fundus of the uterus. The ovaries were not enlarged; they were corrugated, and the left contained several small cysts. In the left pleura were found about two pints of clear serum, with the left lung floating upon it; there were no pleural adhesions. The tumour, after several cysts near its surface had been punctured, weighed fifty ounces. It was solid and hard. In shape and size, it much resembled an adult human brain.

Mr. Paget, of St. Bartholomew's Hospital, to whom half of the tumour was presented, examined it, and reported upon it as follows:

"The tumour, of which I have received a portion to-day, appears to be a good example of the fibrous tumour of the uterus. It has all the obvious characters of structure belonging to such tumour; and with the microscope one finds in it abundant small smooth muscular fibres and tough fibrous connected tissue. It includes a certain number of cysts, as if in progress towards the characters of the fibro-cystic tumour. A thin layer of substance is separable from parts of the outer surface of the tumour, which I suppose is the peritoneum, and the outer layer of the wall of the uterus, which it has extended in its growth. Beneath this layer also there appears to have been large spaces, which I presume were cysts."

Remarks. In connexion with a case of ovarian tumour which came under my notice in the Leicester Infirmary, and which was reported in last week's Journal, this case of fibrous uterine tumour will serve to impress upon us the impossibility in all instances of distinguishing between these two diseases. The similarity between the two cases is increased by the fact that, in the progress of each, before any operation was resorted to, there were vomiting and repeated attacks of peritonitis. The symptoms of fibrous tumours of the uterus, whether attached to the interior or exterior surface are, menorrhagia, which generally is present, especially when the growth occupies the interior of the womb; retention, or a frequent desire to pass urine; and variable sensations of pain in the lower part of the abdomen. The last was the only symptom present in this case; whereas the first mentioned, which is the most important, has not occurred. When the tumour was first observed, it was situated low down on the left side, indicating an ovarian origin. But fibrous uterine tumours are seldom mesial; so that position does not assist much in forming a diagnosis; neither does the desire and inability to pass urine, as this symptom is also observed in cases of ovarian tumour. Indeed, various sensations of pain in the lower part of the abdomen are frequent concomitants of ovarian tumour; and, in this disease, menorrhagia is by no means very rare; so that every symptom of uterine fibrous outgrowth may be observed in cases of ovarian tumour; and the converse. According to the observations of Dr. West and Mr. Lee, in more than one-third of the cases, fibrous tumours are situated on the posterior walls of the uterus, causing more or less displacement of the os backward; and, when the tumour is situated on the anterior wall the os is of course displaced in the contrary direction; but in this instance, as the growth was attached to the fundus, the uterus occupied its usual position. The slow growth of the tumour certainly indicated a uterine origin; but it appears to me that the bulk of the evidence most accorded with the view that it was ovarian. Immediately before proceeding to perform ovariotomy in cases where a doubt exists as to the nature of the growth, it would be advisable to make a small incision through the abdominal walls, in order to obtain the colour of the tumour; as, if it be bluish white, it is ovarian; whereas, if it be red, it is probably uterine. If a correct diagnosis have been formed in this case, I do not believe that the operation would have been resorted to; inasmuch as, in the few cases on record in which fibrous outgrowths of the uterus have been removed by gastrotomy, all, except one reported by Atlee, an American, have ended fatally. Besides, these tumours do not tend, as a rule, rapidly to destroy life; and this patient was not exposed to two of the causes which induce a fatal result in this disease. Not being married, she was

not likely to be pregnant; and she did not suffer from menorrhagia; but, from the occurrence of ascites, it is not probable that she would have survived long.

If the tumour had been ovarian, was ovariotomy advisable in this case? The profession is divided into two parties on this question. One party holds that the operation is so very frequently fatal, that it is never justifiable; the other contends that, in properly selected cases, the operation is not only justifiable, but advisable. In my humble opinion, the position of the latter is best supported by facts. Dr. Clay of Manchester, who has had greater experience in this operation than any other man, last summer had performed it in 79 cases, 55 of which had been successful; but he believes that, with his increased experience, he will not in future lose more than 25 per cent. He has operated on patients as young as twelve, and as old as fifty-eight years; but he would not operate on a patient beyond fifty-eight. He seldom has removed a tumour weighing less than twenty-five pounds; and he has removed as much as seventy-three pounds at one time; but tumours varying from thirty-five to forty pounds in weight, have been the most common. He prefers a case without adhesions; but he thinks lightly of them, and does not hesitate to operate in cases otherwise favourable. Where they exist, when the adhesions are recent, he detaches them; if firm, he cuts the band near to the tumour, leaving a portion attached to the peritoneal surface. He has often, however, cut away large portions of the peritoneum without bad results; and he does not fear to sponge out the abdominal cavity. He invariably adopts the large incision. According to his statements, most cases of ovarian tumour will be suitable for this operation. The only objection he mentions is, the patient being above fifty-eight years of age; but I presume he would not operate where the patient was very feeble, or suffered from a formidable disease in some other organ. He states that ovarian tumours "seldom exceed two years without completing their termination some way;" but I have myself met with cases, in which large tumours of the ovary had existed for a long series of years, and were a source of annoyance, chiefly from their weight, and the effects of pressure. Some, I know, run a very rapid course; and, according to Professor Simpson, they may even lead to a fatal result within a year. Cazeaux states that their duration is variable, the average being about four years; whereas Velpeau believes the average to be six, ten, or twelve years; and, according to Huguier, the younger the patient, the more speedily does she sink under the disease. It appears to me that in an affection in which the natural tendency to recovery is so very slight, and in which the progress to a fatal result is so certain, and in some cases so rapid, we should be culpable unless we resorted to the means available to science to control or to cure the disease. Ovariotomy is the only remedial measure to which we can resort, with the hope of success, in the cases of multilocular tumour, which are much the most common. But some surgeons under no circumstances will perform this operation. Velpeau states "that extirpation of the ovaries is a fearful operation, and ought to be proscribed, even were the cases which have been announced real." This opinion, I have reason to know, is extensively held by surgeons in our own country. I was told last year by Mr. Hutchinson, of the Metropolitan Free Hospital, that, in three years, reports of about a dozen of cases of ovariotomy performed by hospital surgeons had been sent to him; and they every one had ended fatally. Moreover, as far as he knew, the details of not more than one or two of these cases had been published. Dr. Clay's success is extraordinary, and is not approached, I believe, by that of any other practitioner. His plan of operating, and the treatment he adopts subsequently, have been published; and, if carefully followed by other surgeons, one can see no good reason why the results, in other hands, should be so very unfavourable, compared to his.

Tapping is, at the best, only a palliative measure, and is, as you all know, generally had recourse to when urgent dyspnœa is caused by the large mass in the abdomen. It affords information respecting the nature of the tumour, whether it is unilocular or otherwise. If believed to be unilocular after the tapping, the cyst may be dragged through a small incision in the abdominal parietes, and a ligature placed on the pedicle. For this less formidable mode of extirpating an ovarian tumour to prove successful, it is essential that the cyst should be unilocular, which is rare; and that there should be no adhesions, which, according to Clay, is still more rare. In unilocular ovarian tumours,

when adhesions do exist after tapping, we may inject the sac with tincture of iodine. This plan of treatment has been employed of late a good deal in this country, and by none, I believe, more frequently than by Professor Simpson. He has adopted this treatment, he states, in twenty or thirty cases; sometimes with complete success, the sac not again becoming filled, and the patient remaining well and strong; in other cases, the tumour continues present, but has not increased to any great size. In some of the patients, the largest cyst in a multilocular tumour had become obliterated, but the smaller cysts had continued to enlarge; in others, the treatment had failed, inasmuch as the cyst had again filled. In one case only had death resulted; and he attributed the death in this instance rather to the paracentesis than to the injection. The iodine injection, in his hands, has been seldom attended with much pain, or with very severe local or constitutional irritation; but, in the practice of others, the injection has been sometimes followed by unconsciousness which has lasted as many as fifteen hours, and by vomiting which has continued for several days; yet, notwithstanding these grave symptoms, the patients have afterwards done well. A few cases are recorded in which death followed the operation, but in most of these the cavity of the abdomen had received the injection, instead of the ovarian cyst. To prevent the risk of this serious mishap, Mr. Hutchinson recommends a flexible catheter to be passed to pretty nearly its whole length through the canula into the sac before more than half the fluid has escaped, and that the iodine should be injected through the catheter after all the fluid has drained off.

Rather more than a year ago, the treatment of these tumours underwent a lengthened discussion at the Academy of Medicine in France, and the following are some of the propositions deduced from the statements of the speakers by M. Saurel:—"The proceeding to which it is advisable, in almost every case of ovarian cyst, to have recourse is puncture, followed by iodureted injection, with occlusion of the opening.

"Unilocular cysts, without organic alterations of their walls, containing a serous or sero-sanguinolent or albuminous fluid, cysts which have originated in an extra-uterine pregnancy, and purulent cysts are most amenable to treatment.

"The proper time to operate is when the cyst, not having yet acquired a large size, is beginning to cause suffering to the patient, or to exercise an injurious reaction upon the functions."

The only form of ovarian tumour which undergoes, and that very rarely, a spontaneous cure, is that composed of a single cyst. This sometimes ruptures, and discharges itself into the peritoneum, or into some viscus with an external outlet. The fluid in the cyst has sometimes become absorbed, and the cavity obliterated.—*Brit. Med. Journal, Feb.* 27, 1858, *p.* 159.

122.—*Case of Removal of Large Uterine Polypus, by the Curved Ecraseur with Double Action.* By Dr. SAVAGE, Samaritan Hospital.—[There had been in this case frequent uterine hemorrhage during the last two years.]

Many examinations had been made elsewhere previously by various surgeons; but a polypus, if suspected, until the day before her admission, was probably quite out of reach. A swelling could even now be scarcely made out by the finger introduced far into the os uteri. Sponge tents were introduced daily. On the third day the tumour became more distinct, and then rapidly distended through the dilated os into the vagina. On the fourth day it could be felt in size and shape like a large jargonel pear (its neck not much larger than its body), extending into the uterus to be attached somewhere towards its back part. On the fifth day the polypus was laid hold of by a pair of ring forceps, the looped chain of the écraseur being passed over the handle of the forceps, slipped up, and was drawn tight, precisely as the cord in the ordinary operation by ligature, and the tumour was brought away without pain or hemorrhage. Dr. Savage observed that the unwieldy look of the instrument was suggestive of much pain and difficulty; but its curve fell into the hollow of the sacrum with the utmost facility, and its point as readily passed into the uterus as high as he thought necessary. As the chain is flexible only on one side, much careful manipulation was required before it could be got where he thought it ought to be. Before working the handle which tightened the chain, the single fore-finger readily ascertained that nothing

improper was included. The handle was worked at half minute intervals as soon as decided resistance showed that contraction had commenced. The tumour came away in six minutes. From first to last the patient said she felt no pain whatever. The hemorrhage has not reappeared. Dr. Savage said he had heard of two cases of polypus thus treated in this country, but believed they had not been recorded. He had several times seen M. Chassaignac remove parts highly vascular with his écraseur without the least hemorrhage, and thought, as the plan he had adopted in this case was equally safe as the ligature, without any of its obvious annoyances, he would add his testimony to its value to the Medical Society. Dr. Savage strongly recommended an instrument with the double action, the finishing improvement of the inventor, M. Matthieu.—*Lancet, Nov.* 21, 1857, *p.* 524.

123.—*The Polyptome.*—This instrument has been invented within the last few weeks for Dr. Lever, by Messrs Bigg & Millikin, of St. Thomas-street, Borough, and is intended to facilitate the operation of removing broad-based uterine polypi. The instrument, as may be seen from the engraving, consists of a semi-circular blade cutting by its concave edge, which plays freely round a circular joint placed at the end of a steel stem or shaft 5½ inches long, when worked by a trigger and thumb-piece or crescent, which pushes a slide and lever acting on the blade, forward and back. When prepared for use, the lever is drawn back, the edge of the blade being then passed over the part which is to be excised; the operator may now make gentle traction by means of the handle, while by pulling the trigger he causes the blade to sweep forward with a cutting movement for about 1¼ inches. The instrument now becomes a cutting-hook, the cutting edge being in the whole length of its concavity. The operation may now be completed with this hook by simple traction, or, if the base be too broad for this to be do done, the lever may be withdrawn with the thumb, and the first step of the operation repeated.

This ingenious contrivance gives the operator the advantage of exercising at will either the cutting motion of a knife, or what is technically termed "incision by traction;" an advantage which will, no doubt, be fully appreciated by those surgeons who are at all acquainted with the difficulties met with in performing these operations.

There is an "hook," very similar in shape to that formed by the cutting-blade and shaft of Messrs. Bigg and Millikin's "Polyptome" when the lever is thrust forward, in the Museum of the Royal College of Surgeons. It is very evidently of very ancient date, and is unarmed. It lies close to the box of amputating instruments which where taken from the French in Egypt; but it is simply a solid hook, intended only to cut by traction, like the elegant polyptome of Dr. Simpson.—*Medical Times and Gazette, Jan.* 2, 1858, *p.* 9.

124.—SUCCESSFUL REMOVAL OF A LARGE INTRA-UTERINE POLYPUS BY THE ÉCRASEUR.

Under the care of Dr. PRIESTLEY,* St. George's and St. James's Dispensary.

[The patient had suffered from severe and protracted menorrhagia, large clots passing occasionally from the vagina. She was exceedingly anæmic.]

On examination by the vagina, the os uteri was found dilated, and the uterine cavity formed a continuous canal with the vagina, a smooth ring indicating the line of demarcation between the two. Inside the uterus, and with its lower extremity reaching down to the smooth ring indicating the os uteri, was found a firm rounded tumour, the size of an orange. Its attachment was posterior and near the fundus uteri. It had no suspending narrow peduncle, but was sessile, with a base of attachment as broad as the tumour itself. A doubt was at first entertained, from its peculiar form and relations, whether it might not be an inverted uterus. The history did not confirm this, however, and the uterine sound, passing easily upwards four or five inches along the anterior surface of the tumour, left no doubt that it was an intra-uterine polypus.

When the relations of the tumour were accurately ascertained, it was proposed to postpone its removal for some little time, in the hope that the uterus would make an effort to expel it, and thus form an elongated peduncle, which might be divided with less risk. Hemorrhage recurred, however, to such an alarming extent that the interference became imperative. On the 3rd of July, therefore, Dr. Priestley, assisted by Mr. Spencer Wells, proceeded to excise the mass. The instrument employed was the double-action écraseur, kindly lent for the purpose by Dr. Savage, and which was curved in form, to adapt it to the axes of the pelvis. The patient being placed on the left side, the polypus was first seized with the vulsellum, and while by means of this gentle traction was made downwards, the chain of the écraseur was passed first over the vulsellum, and then over the polypus up to its attachment in the cavity of the uterus. Great care was necessary in pushing up this chain along the genital passages, as, from the irregular form of its divisions, fear was entertained of lacerating or abrading the vagina or uterus.

The base of the tumour being at length reached, the chain was gradually tightened, and in about a minute and a half no further resistance was encountered; the polypus was found loose in the uterine cavity, and was removed by the vulsellum. Scarcely any hemorrhage followed. A small clot, perhaps half an ounce in weight was removed, and a piece of sponge placed in the vagina. When the sponge was removed the following day, it was scarcely stained with blood, showing that no after-hemorrhage had ensued. Little pain was complained of during the operation, and except that diarrhœa supervened on the fourth day, there were no unfavourable symptoms. A week after the operation, the patient was convalescent, and made an uninterrupted recovery. She is now perfectly well, and has had no recurrence of the hemorrhage; the uterus being nearly of its normal dimensions.

The advantages of the écraseur were particularly manifest in this case. The urgent symptoms of the patient necessitated immediate interference, and the broad attachment of the tumour rendered an operation by excision little less formidable than a so-called enucleation. Removal by a sharp cutting instrument would have threatened severe hemorrhage, not readily controlled by plugging, when the uterus was so flaccid and dilated; while separation by ligature in the ordinary way would, on the other hand, have exposed the patient to all the dangers arising from such a mass slowly putrifying in the vagina.

Dr. Priestly suggests that it might be advantageous to replace the usual hinge-jointed chain of the écraseur, which is managed in such cases with difficulty, by a silver wire, or small linked curb chain. Dr. H. R. Storer, of Boston, U.S., has successfully excised the hypertrophical cervix uteri, by an écraseur furnished with a silver wire; and Dr. P. believes that a wire or curb chain would be passed more easily round a tumour in the uterus or vagina, and that tightened by the écraseur it would act efficiently in cutting through the substance of a tumour or polypus.—*Medical Times and Gazette, Jan.* 30, 1858, *p.* 115.

125.—*Polypus Uteri and its Cure by a Simple Operation.* By I. Baker Brown, Esq.—C. W., aged 37, had during the last four years suffered from constant hemorrhages, which were so severe as to cause syncope, and threatened death. When I saw her she had become anæmic and emaciated. On examination I discovered a polypus about the size of a small pear, with a thick base attached just within the os uteri. On November 27, I removed it in the following simple manner. I seized it with a pair of long vulsellum forceps, and dragging it down into sight, passed through the base a needle armed with a double ligature of strong tissue, so as to tie it in two parts. I then cut off the polypus just anterior to the ligature, and plugged the vagina with oiled lint; the whole operation lasting two or three minutes. From this time there was no hemorrhage, and in one week she was up and well. This was the first time for four years she had passed one week without hemorrhage.

This plan which I have practised and advocated for some years past, I consider much superior to either of the two plans generally adopted, viz., either simply cutting off the polypus, or the more tedious process with Gooch's apparatus, where the sloughing of the polypus within the vagina generally causes serious constitutional disturbance; not unfrequently pyæmia, and sometimes death.—*Med. Times and Gazette, Jan.* 16, 1858, *p.* 40.

126.—ON THE PERINÆO PLASTIC OPERATION.

By Dr. Henry Savage, Senior Physician to the Samaritan Hospital for Women.

[Until the last thirty years no surgical means at all were adopted for the permanent relief of prolapsus uteri, and this is the more to be wondered at, from its frequency and the great distress caused by it to the patient.]

The object of this paper is to state as briefly as possible the grounds for surgical interference in this one of the many diseases peculiar to women, which I am disposed to consider *as a rule*, can only be successfully treated by the knife.

It is reported in the 'Rep. d'Acad. R. de Méd.,' August 11th, 1835, that a M. Girardin proposed excision of the vagina, in 1822. Whether this be true or not, the first proposition of the kind ever carried out, was certainly made in 1831, by one to whom medicine is so universally and deeply indebted—Dr. Marshall Hall.

Before proceeding to an estimate respectively of the various surgical plans adopted since this date, the following considerations deserve notice:—

1. The uterus is retained at its normal *elevation* by special ligaments—the cervical. These ligaments, and these only, tend to prevent prolapsus.

2. All other uterine displacements are checked by the broad ligaments.

3. The true vagina terminates where it perforates the perineal fasciæ, the perineal portion being for the most part mucous and tegumentary.

4. The perineum gives this end of the vagina a direction upwards, the bend or angle commencing at the perineal fasciæ, so that, as in delivery, anything extruded from the vagina, must make a turn up, under the pubic arch.

5. So long as the cervical ligaments are intact, the uterus sustains no superincumbent weight, as from its pear shape, the surrounding viscera tend to press it upwards.

6. The moment the uterus sinks within the inverted vagina, the two organs constitute a hollow cone, the uterus being at the pendent apex, with every disadvantage, having to sustain all the superincumbent pressure.

7. The vagina does not support the uterus under any circumstances. So long as it is not inverted, the line of superincumbent pressure crosses it, tending to bring its sides together. It is solely in this sense that the vagina can sustain a uterus which has lost the support of its cervical ligaments.

8. The true perineum is formed by the perineal fasciæ, where they all join at a line from one tuber ischii to the other. It can be felt by the finger as a strong resisting ring, the *vaginal ring*, where at this point it is thickened by erectile tissue and additional fibres.

9. The tegumentary perineum is the mucous membrane and skin beyond.

10. By superincumbent weight, I allude to the downward pressure partly due

experience) is this: In all cases where the operation has restored the vaginal angle by the formation of a new perinæum, sufficiently thick and advanced towards the pubis the operation succeeds; the results improving every day by subsequent contraction of the vagina, and the contraction (slow in proportion to the duration of the prolapsus) of the vaginal ring. The three cases (Brown) were not satisfactory. One of them I did over again according to my own plan, and the patient has ever since (a year ago) shared in the most laborious work of the hospital without pad or bandage. One (Hall) turned out very successful. Prolapsus of the bladder predominated. A piece of mucous membrane, the size and shape of the bowl of a large table-spoon was dissected off the most prominent part of the prolapsus, and the wound brought together laterally by interrupted suture. The patient wore a Zwanke's pessary for a few months, until the cicatrix was firm and secure.

Fig. 3.

The three Geddings' succeeded very well; but besides closing the vaginal orifice more than necessary, the result was rather unsightly. As will immediately appear by the subjoined two cases of failure, the *mere* closing the vaginal orifice is worse than useless. If the uterus is proportionately so small that besides finding its way through the contracted vagina, so as to rest on the new perineum, it can turn the vaginal angle, so as eventually to be retained only by the vaginal aperture, then, however small this may be, the uterus will very shortly make its way out as bad as ever.

The two cases of failure just alluded to were both single women, of good character. The uterus in each was exceedingly small; the same operation which succeeded so well in the other instances was most carefully gone through—in one case twice. Very shortly after the patients began to get about, the uterus passed the angle, and presented at the vaginal orifice, through which it bored its way, notwithstanding all such appliances as belts and pads.

Marshall Hall's operation would probably answer perfectly in such cases as these, where the vagina had not been previously much distended.

Mr. Zwanke, of Hamburg, about two years ago sent me a dozen various sizes of his extremely ingenious form of pessary. Like the operation just named, this instrument answers by opposing the tendency to vaginal inversion, not as a support. Wherever it failed to do this, it was forced out irresistibly. The practical value of pessaries, however, is not intended to form a part of this communication.—*Lancet*, *Feb.* 13, 1858, *p.* 164.

127.—*On Prolapsus Uteri.* By I. Baker Brown, Esq.—[The impression conveyed to Mr. Brown on the perusal of Dr. Savage's paper on the above subject was, that Mr. Brown had merely followed in the footsteps of Fricke and Geddings in the operation introduced by him. He was first led to perform the perineoplastic operation from practical observations of the disease before he ever heard of Fricke's or Geddings' operation.]

I wish to observe that Dr. Savage's illustration of my operation does not give at all a correct view of it as I have practised it for some years past. I remove quite as large a portion of the surface as he does; and the difference between his operation and mine is, that I am content to remove merely the mucous membrane and loose skin of the labia, whilst he removes the vagina itself, which I have not yet had reason to consider necessary.

There are two practical points upon which I lay great stress. 1. The introduction of a catheter into the bladder with a bag attached to it, so as to prevent the viscus ever being filled with the urine, and thereby dragging down the uterus. 2. Not to retain the deep sutures beyond the evening of the second day.

I may mention that, out of all my numerous operations, I can only trace three in which it has not been successful.

1. In the first of these the poor woman is in the last stage of phthisis, and all her tissues are absorbed.

2. The woman went about the trying and laborious work of the wash-tub much too soon, without wearing any bandage or other support.

3. In the case of E. M., I have lately heard from Mr. Buller, of Reading, that the uterus had again pushed its way through the vagina. This is one of the cases in the virgin in which there is a complete inversion of the vagina, which no operation of this kind can relieve.

I also know one case of prolapsus of the bladder, which has returned again after a second confinement.—*Med. Times and Gazette, March* 13, 1858, *p.* 277.

128.—PLASTIC OPERATION FOR PROLAPSUS UTERI.

(Cases under the care of J. Hutchinson, Esq., Surgeon to the Metropolitan Free Hospital.)

Sarah M., aged 66, widow, two years under observation, the mother of a large family, had suffered for fourteen years from complete prolapse of the uterus. She had been under several specialists on account of it, but had obtained no permanent relief. It did not appear that there had ever been any actual laceration. The uterus, whenever she stood, hung between the thighs, and, in parts, its surface was almost cuticular from friction. It was much enlarged from chronic inflammation, and an ulcer with hardened edges, and the size of a halfpenny, occupied its anterior lip. There was some prolapse of the bladder, and the rectum was also in a slight degree involved. Such being her condition, she had for years been precluded from any active employment, and being of a cheerful, energetic temperament, listened with joyfulness to a proposal to relieve her by operation. Her daughters did all they could to dissuade her from it, thinking her too old; but she persisted in her determination. It should be stated that her vigour was extraordinary for her years. On the left side of the abdomen was a fatty tumour, the size of a fist, for which she had long worn a truss, in the belief that it was a hernia.

The operation was performed on August 17th, 1855. A free paring having been effected, the length of the denuded surfaces being about an inch and a half, the quilled suture was applied very deeply. The skin was united by the interrupted suture. No incision of the sphincter ani was practised. At the same time, while under chloroform, the fatty tumour was excised from the abdominal wall. She rallied well afterwards, and nothing could have been more satisfactory than her progress. The quilled sutures were cut away on the eighth day, while the interrupted one was allowed to remain nearly two weeks. When the latter was removed, it was not causing the slightest irritation, and passed through a track in the skin only just as large as needful to admit it, no ulceration whatever having occurred. During the third week the woman began to leave her bed, and at the end of a month all discharge had ceased. The union was complete throughout the whole extent, affording an artificial perinæum so long that it came nearly as far forwards as to the meatus. She did not, however, experience any inconvenience in micturition.

This patient was repeatedly seen during the first six months after the operation, and Mr. Hutchinson has since had frequent opportunities of inquiring of her daughters as to the permanency of her cure. She now lives in Lancashire. The accounts received have been that, from the date of the operation to the present time (more than two years), she has never, in the least degree, suffered from her former complaint. She has ever since enjoyed good health, and been able to go about as much as her years permit, without inducing either pain, prolapse, or discharge. It should be added that, on taxtile examinatioa, three months after the operation, it was ascertained that the uterus was as high as the finger could well reach, and that all shrinking of its tissues had vanished, and that the ulcer was soundly treated. This examination was made directly after a long walk to the hospital.

We have related this case at full, as it possesses peculiar interest on account of the age of the patient, the severity of the affection, and the permanency of the cure. It must be remarked that the vulva was closed further forwards than would

have been suitable, had the patient been either married or of marriageable age. By so doing, a great guarantee as to completeness and permanency of result is obtained, and in those whom age makes it a matter of indifference, it is consequently better to bring the union well forward. Indeed, even in younger persons, no great risk is encountered, as nothing is easier than to divide the anterior edge of the artificial perinæum, should it be found requisite.

[In the second case, that of a married woman, aged 46, and the mother of a large family, the prolapsus had existed about a year. The perinæum had been lacerated in some one of her labours, but not to any great extent. A small polypus was found growing from the anterior lip of the uterus; this was removed by torsion before the operation was performed. In this case the parts united well, and a year after the operation the prolapsus had not recurred.]

Details of the Operation.—In this case and the preceding one, an exactly similar operation was performed. The flap of mucous membrane removed was much larger than in the method practised by Fricke and some others. Thus the posterior part of the vagina was fully denuded to a distance of at least an inch and a half from the perinæum. Taking the anal commissure as the starting point and measuring an inch and a half upwards into the vagina, then from the same point from an inch to two inches on the margin of each side of the vulva, just at the junction of the skin with the mucous membrane, and lastly connecting the uppermost extremities of these measurements, would accurately map out the portion removed. One of the chief points on which Mr. Baker Brown has so well insisted, is the absolute necessity for making a large flap, instead of merely denuding two narrow slips. By the latter method a thin perinæum is only obtained, while by the former the vagina is much contracted in the lower two inches of its course. Upon attention or neglect of this matter will much depend the success of the case. Even in Mr. Brown's book the plate does not show the denuded surface as extending sufficiently high on the posterior wall of the vagina.—*Med. Times and Gazette, Nov.* 28, 1857, *p.* 551.

129.—ON COAGULA FORMED IN THE VEINS DURING THE PUERPERAL STATE.

By Dr. Graily Hewitt, Assistant Physician to the Samaritan Free Hospital for Women and Children, Lecturer on Comparative Anatomy at St. Mary's Hospital, London.

[In all those eminently fatal affections to which puerperal females are subject, coagulation of the blood occurs within certain of the veins, and after death appearances are found traceable to this coagulation, and the secondary changes which the coagula have undergone.]

What are the Circumstances preceding, or necessarily connected with, the Act of Parturition, which may lead to, or favour, the Formation of Coagula within the Veins?

These may be advantageously considered under the following heads:

1. *The State of the Blood itself during Pregnancy.*—It is well known that the blood undergoes changes of a very marked character during pregnancy, and especially towards its termination. The amount of fibrin is increased, the number of the blood-corpuscles undergoes diminution, while the proportion of albumen is also a little less than usual.

It is reasonable to suppose, that blood which contains a higher proportion of *fibrin* than usual will part with a portion of it more readily than under normal circumstances, other conditions favourable to coagulation being present (statis, &c.), and a nucleus existing round which the fibrin may be deposited; but it does not appear probable that coagulation *en masse* would be likely to occur even in blood highly fibrinous, unless this process were otherwise assisted. Still, if there be a nucleus, such as a small coagulum, formed at any situation, excess of fibrin in the blood would favour its extension. Andral, who with Gavarret, first pointed out the increase of fibrin in the blood in the latter months of pregnancy, suggested that to this circumstance was due the liability of puerperal women to inflammatory affections. With a little alteration of the wording of Andral's suggestion, it may be here repeated in this shape: the hyperinotic state of the

blood of pregnant women predisposes to the occurrence of those puerperal affections of which the so-called phlebitis forms a constituent part, in which, in point of fact, coagulation of the blood in the veins is the starting point.

The diminution in the *number of the red corpuscles* is next to be considered. Cazeaux considers that the condition of the blood present at this time resembles that of ordinary chlorosis. Dr. Tyler Smith alludes to the chlorosis of pregnancy constituted by this change in the blood as a pathological rather than a physiological event. Scanzoni speaks of chlorosis being occasionally present under these circumstances. The truth probably is, that what in some cases appears to be a pathological state, is only an extreme physiological one. The question now is, however, has blood which contains a less number of corpuscles than usual any particular tendency to coagulate? Facts are wanting to reply to this inquiry. In reference, however, to the influence of chlorosis generally, a remark of Scanzoni's is interesting. It is to this effect: that in women in whom this chlorotic state was well marked, he had observed a great tendency to become affected with puerperal fever: as before stated, coagulation of the blood is a chief element in most of those affections classed generally under the head of puerperal fever. Another condition of the blood occasionally present in pregnancy—viz., *uræmia*, is considered by some authorities to increase the tendency of adhesion between the particles of fibrin and the vessel wall, and thus to favour coagulation.

2. *The Mechanical Effects of the Pressure of the Enlarged Uterus.*—During pregnancy, the enlarged uterus forms a tumour, which does not always adapt itself so as to allow of the circulation in the adjacent parts being carried on so uninterruptedly as in the non-parturient state. The pressure of the tumour affects the organs with which it was in contact, and the large venous trunks which are situated immediately behind it. The veins of the rectum are frequently enlarged, giving rise to hemorrhoids, and the veins of the lower extremities frequently become distended and varicose, and the extremities themselves œdematous, from the pressure exercised on the iliac veins. The dark colour of the vagina due to the turgidity of the veins in that situation has a like cause. The descent of the diaphragm being somewhat impeded, the right heart is liable to distension, and the passage of the blood to the lungs is interfered with, in consequence of the obstruction to the complete inflation of these organs. These, and many other conditions of an allied character, traceable to disturbance of the circulation, undoubtedly favour stasis of the blood in certain veins, and may, under some circumstances, lead to its coagulation. As pregnancy advances, these effects become more marked in degree. Cases are on record, in which coagulation would seem to have been thus produced in some of the large iliac veins during the latter part of pregnancy, the coagula having afterwards increased in size and extent, and produced serious consequences.

3. *Influence of Pressure during the Act of Parturition.*—It now and then happens that the head of the child rests for a considerable time on the brim of the pelvis, in such a position as to retard the venous current passing from the pelvic organs and lower extremities, and this effect will of course more readily be produced if the head of the child be larger than usual, or the brim of the pelvis be contracted. Stasis of the blood in certain of the veins passing towards the main trunks thus pressed upon is an effect of this pressure, and if it continue for a sufficiently long time coagulation follows. Velpeau appears to have originated the idea that this circumstance was one of the causes which are occasionally efficient in producing the disease called phlegmasia dolens, an affection undoubtedly constituted by an obstructive affection of one of the iliac or femoral veins. The fatal results which frequently follow labours in which the difficulty just alluded to has to be encountered are perhaps too exclusively attributed to the manual and operative measures necessarily had recourse to in the delivery of the child under such circumstances; certain it is that prolonged pressure, such as is occasionally exercised on the vessels behind the uterus, and even on those in the substance of the uterus itself, by the powerful expulsive efforts of this organ, particularly when the liquor amnii has been evacuated, must have a very considerable effect in retarding the circulation in the neighbouring vessels. That the result may be actual coagulation in the vessel subjected to the pressure, and perhaps even injured by it, it is not difficult to conceive.

[The following are among the causes leading to or favouring the formation of the coagula in question]:—

Deficient Contraction of the Uterus, and of the Venous Plexuses near it, after Delivery.—The condition of the pelvic visceral veins at or near the period of parturition is peculiar. Large venus plexuses exist around the uterus, in the broad ligaments, &c., in the non-puerperal state, but these undergo a very considerable increase in size during pregnancy. The unusual functional activity of the uterine system is thus necessarily accompanied by an increased capacity of the veins composing these plexuses. Physiologically, therefore, and under normal conditions, these veins are much larger than usual during pregnancy. But this is not all: the uterus itself, and especially that part to which the placenta is attached, is full of large venous sinuses: vessels which in the non-impregnated state of the organ are scarcely visible are now extraordinarily increased in bulk, and the quantity of blood passing through them is very great. While the fœtus is still organically connected with the mother by means of the placenta, the blood passes through these large veins with the same facility as in other parts of the system. After delivery, however, the placental supply is no longer needed; the arteries supplying the uterus with blood shrink, in accordance with certain developmental laws, and nature has provided a means for producing a corresponding diminution in the calibre of the uterine veins and sinuses, in the contraction of the uterus itself. These veins are probably infinitely more dependent on this latter process, as regards their contraction, than on any adherent tendency of the vessels themselves to contract. As is well known, contraction of the uterus does not always occur so soon after expulsion of the fœtus as is desirable; its involution is delayed. The blood contained in the large sinuses or veins then stagnates (supposing hemorrhage does not take place), and coagulation, or a tendency to such coagulation, of the contents of the vessels is produced. The extra-uterine venous plexuses normally undergo, after delivery, a great diminution in their size, according to Virchow; and, if this contraction be delayed, or do not take place, a tendency to coagulation is thus also produced.

In reference to the influence of imperfect contraction of the uterus, on coagulation, several obstetricians have remarked on the frequency with which puerperal affections of veins occur in cases of retarded involution of the uterus.

The Existence of the Normal "Physiological" Coagula, which after Delivery close up the Orifices of the Uterine Veins at the Seat of Placental Attachment.—The separation of the placenta from the uterus necessarily involves a solution of continuity in the venous canals, up to that time occupied in returning the blood to the mother from the maternal portions of the placenta. The necessary closure of the divided vessels is accomplished chiefly by the agency of the contraction of the uterus itself, the arrangement of the vessels being such as to favour this process, when the size of the uterus diminishes. But the contents of the vessels have also a share in the perfecting of the closure in question, the blood within them coagulating and forming a plug by which the occlusion is completed. The formation of such coagula within the veins at this position is favoured by two circumstances: there is stasis of the blood within the veins, and, in many cases, exposure of the same to the action of the air. It will readily be seen that the size of the coagula occluding the veins, and the degree of contraction of the uterus must have an inverse ratio the one to the other. If the contraction be delayed, or be from any cause imperfect, the calibre of the veins is not reduced to the same extent, and the coagula necessarily formed are of larger dimensions than under the opposite combination of circumstances; they will also extend farther towards the heart. Again, the vessels thus unnaturally open are also more liable to be affected by any morbid action which may be going on in the mucous membrane with which they are then directly connected. The formation of a limited coagulation, plug, or thrombus within the uterine veins at the point of attachment of the placenta after delivery, would thus seem to be a usual physiological event. Virchow considers that the existence of these "physiological" coagula have no small share in forming the extensive and marked coagulation in the large veins of the pelvis and parts adjacent to the uterus, so frequently met with after death from puerperal causes. The larger the coagula are in the first instance, the greater will be their effect in producing subsequent coagulation in the neighbouring veins. Im-

perfect uterine contraction obviously exercises an unfavourable influence in a like direction.

The causes mentioned under the last two heads are, for obvious reasons, often combined. They are probably the most important "moments" in the production of coagulation in the veins during the puerperal state, to which the others mentioned occasionally act as subsidiary.

The next circumstance to be attended to as capable of playing an important part in the process now under consideration is, *the occurrence of hemorrhage from the uterus after parturition.* Post-partum hemorrhage, depending, as it for the most part does, on deficient contraction of the uterus, tends of itself to relax that organ, and thus to interfere with that perfect subsequent involution of the uterus so essential to the safety of the patient. Hemorrhage is thus not only an effect, but a cause of deficient uterine contraction. In cases of post-partum hemorrhage, actively and successfully treated, the uterus is made to contract, and coagula of more than average size have no time to form or space to form in; but when this is not the case, and the treatment is only partially successful, the uterus contracting a little, and again becoming distended, these are just the conditions likely to favour the formation of large coagula in the veins in the first place, and their increase in size and extent subsequently. When the hemorrhage ceases, a coagulum forms at the orifice of the vessel. Now, when the loss of blood has been excessive, the clot so formed will, from its looseness and want of consistence, less completely close the vessel than when the clot has been formed from blood having the normal proportion of fibrin and blood corpuscles, and it becomes a question whether this imperfect closure of the orifice in question may not subsequently allow of the mixture with the circulating fluid of those deleterious and septic matters which are occasionally formed on the internal surface of the uterus after delivery. This leads us to consider—

Certain conditions of the internal surface of the uterus following on parturition as influencing the formation of coagula. Mechanical injury of the uterus owing to the use of instruments, &c., may be followed by inflammatory action in the uterine substance. This inflammation may pass away speedily, leaving the blood-vessels of the uterus comparatively little implicated. The internal surface of the uterus may take on an unhealthy kind of inflammation in consequence of such mechanical injury, or independently of it. The veins of the uterus corresponding to the seat of attachment of the placenta become under such circumstances also affected, the morbid action passing directly from the surface of the uterus to the interior of the veins. The precise kind of action which is thus induced in the veins of the uterus it is difficult to define. It is sufficient for the present purpose to state that coagulation of the blood in the veins leading from the affected surface is found to be present, and to be *one* of the effects produced in such cases, and it is probable, on certain experimental data, that such coagulation is often a primary effect of the action of the inflammatory products on the blood within these veins.—*Lancet, Jan.* 9, *and Feb.* 20, 1858, *pp.* 33, 187.

130.—OVARIAN DROPSY AND INJECTION OF IODINE.

By I. Baker Brown, Esq.

The following case has many points of great interest. Miss C——, aged 26, of a delicate constitution, suddenly discovered an enlargement of the left side of the abdomen, which proved to be ovarian dropsy, and the disease so rapidly progressed that in the short space of six months it became absolutely necessary to relieve her by tapping, and about sixteen pints of highly albuminous dark fluid were drawn off. In six weeks the operation required repetition. At the end of seven weeks more the distension and inconvenience became so great that Mr. Brown was requested to see her. He then heard the history just given, as also that she had consulted a few weeks before a celebrated London physician, especially with a view to inquire of him as to the utility of injecting the cyst with iodine. This gentleman in no measured terms condemned any interference beyond tapping, and especially the injection of iodine, stating that it was almost uniformly

...ly emaciated, with a quick, irritable pulse, and ... Upon being asked whether I recommended iodine, ... patient too seriously diseased to permit the hope of ...ure, but that I did not look upon the injection of ... increase the danger. Having submitted fully and ... apprehended from every kind of interference, including ... the patient and friends themselves to decide. In twenty- ...lected to try the iodine. On the following day, therefore, ... ℥ss of the strong tincture of the Edinb. Pharm., and ... within the cyst. The patient was less affected than usual by ...ine and its elimination. Although iodine could be detected in ... stomach, it could not in any appreciable degree either in the ... Under the free administration of stimulants the patient was con- ...days, and in ten so much better in general health, as to be drawn ... clean for half an hour. Although there is no doubt there will be ... of the fluid, still it is evident to all that the health has been improved ...ated by the iodine injection. This case appears to me to be instruc- ...several grounds, and is an additional case in my own hands where the ope- ... was not fatal. (I have not yet had one fatal case.) It therefore contro- ... the wholesale condemnation of the plan. The improvement of her general ... only warranted its trial. The absence of elimination through the kidneys ... quite new to me. Many cases which I have already recorded, one of which ... operated on nearly three years since, have continued well and free from dis- ... I therefore infer that the operation is worthy the most serious considera- ...tion of the Profession, and would make the following practical deductions from ...my experience. 1st. That the operation, if carefully performed, is not so danger- ...ous as has been supposed. 2nd. That it has in many cases, both in France and in ...this country, proved eminently successful. 3rd. That in the severe forms of ...multilocular ovarian dropsy, one or more of the cysts may be destroyed by the ...iodine, and so retard the progress of disease. 4th. That where it does not cure, ...yet it very much improves the general health.—*Med. Times and Gazette. Dec.* 5, 1857, *p.* 587.

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131. ON SECONDARY AFFECTIONS OF THE JOINTS IN PUERPERAL WOMEN.

By William Coulson, Esq., Surgeon to and Lecturer on Surgery, at St. Mary's Hospital, and Consulting Surgeon to the City of London Lying-in Hospital.

Puerperal women are occasionally attacked by a severe form of disease attended by low fever, with effusion of pus into the joints, and almost always terminating in death. Various opinions are entertained respecting the nature and causes of this disease. My object in the following remarks is to show that it is connected with pyæmia.

The local affection occurs under two circumstances; viz. after delivery, at the full period of gestation: or after abortion in the earlier months. It is important to include the latter kind of cases, which have not been sufficiently noticed, as they throw great light on the true nature of the disease, and dispose of the theory which would attribute the secondary affections to child-bed fever. The articular disease, as I shall presently show, is merely one of the effects of pyæmia; but it receives certain modifications from the puerperal condition with which it is associated. Even in puerperal women these secondary joint affections may occur under several states which may be distinguished from each other. They are most commonly developed during the course of puerperal fever, from the third to the sixth day of the complaint. In other cases, they occur after convalescence from an attack of puerperal fever. Lastly, in some other cases they set in after parturition, without the patient having presented any symptoms of puerpal fever.

Although the articular affections are essentially the same under these different circumstances, it is useful to distinguish these circumstances, as they modify the conditions which precede or accompany the local disease. Thus, when

the symptoms of purulent infection of the blood are mixed up with those of true puerperal fever, we have a complex malady which has puzzled some of our best accoucheurs, and which, indeed, it would be impossible to understand, if the same affection did not sometimes occur in puerperal women without puerperal fever.

When the articular affection occurs during the course of puerperal fever, the following train of events is generally observed. For the first three or four days, the ordinary signs of puerperal fever are alone recognized; then some symptoms of phlebitis may present themselves; or these symptoms may be so slight as to be overlooked. They are soon followed by a change in the condition of the patient. Severe rigors often usher in this change; the fever increases; the countenance is anxious and sallow; the respiration becomes hurried; there is irregular delirium; and the patient sinks.

In these cases, there are two dangerous maladies; viz. puerperal fever and purulent infection, running their course at the same time; and it is not to be wondered at, if the general condition of the patient presents an anomalous appearance, or if it be rendered obscure by the predominance of one set of symptoms over the other.

In another set of cases, this obscurity does not exist. The patient has completely recovered from an attack of puerperal fever, or has not had any attack of that complaint; all the dangers of the puerperal state having apparently passed over. She goes on well for the first week or two; there is no fever; no abdominal pain; no apparent danger of any kind. Suddenly, a severe rigor sets in; this is followed by febrile symptoms, small quick pulse, &c.; or the attack may commence with local symptoms, the general disturbance being scarcely perceptible. These latter cases are very remarkable, and not long ago were mistaken for rheumatism.

The disease, with its local effects and constitutional symptoms, may occur after abortion in the early months. Here there are no symptoms of puerperal fever, properly so called: but there may be some slight symptoms of uterine phlebitis. These are often chronic and obscure cases; yet they proceed and terminate like the former series.

The secondary joint affections are the same under all these different circumstances. They may be either purulent or non-purulent; articular or periarticular; acute or chronic. These different conditions are found to exist in various cases; but the most common form of attack is acute, of a purulent nature, and occupies the interior of the joint. At other times, though extremely acute, the attack is non-purulent, and confined to the exterior of the joint; while in several cases, there is pus in the cavity of the joint, without any lesion of the articular tissues.

It is also worthy of remark, that in several cases some of the joints are attacked by purulent inflammation, while other joints in the same subject suffer from simple inflammation with effusion of serum.

The period at which the articular affection sets in is various. In a few cases, it has happened on the second day after delivery; in many other cases it does not appear until a few days before death, viz. from the twenty-third to the twenty-fifth day. Generally, however, the joints are attacked between the third and fourteenth days. The knee-joint is most frequently the seat of the disease. I have found that it is attacked in one-third of the cases in which the joints have suffered; next comes the wrist-joint; then the ankle, the shoulder, elbow, hip; and, lastly, the smaller joints. In a few cases, the purulent effusion has been confined to the symphysis pubis; but I am inclined to think, from the history of these rare cases, that the suppuration of the pubic joint was primary, not secondary—the inflammatory action having extended from the cellular tissue of the pelvis.

The duration of the joint-disease necessarily depends on the duration of the primary affection with which it is connected as an effect. It is not often prolonged beyond a week, but it may last from one to three weeks. In chronic cases the duration may extend to three months. I have published a remarkable case, where death took place on the sixty-fifth day after delivery, and on the fifty-fifth after the attack. Mr. Arnott also mentions a case, which was prolonged for forty-four days; but no *post-mortem* appearances are given.

The local articular symptoms, and the changes discovered after death, present several varieties. In some cases there are no local signs of articular disease; even

pain about the joint is absent. After death the cavity contains some pus; the articular tissues are quite healthy. These are exceptional cases. It is very rare not to find some one joint visibly affected, although the rest may have been the seat of passive suppuration.

The local disease commonly appears with the signs of synovial inflammation. The attack is always of an acute nature, commencing with pain more or less severe, which is quickly followed by swelling. The colour of the skin remains unchanged; and the swelling is evidently caused by effusion of fluid within or round the joint. When the articular disease sets in, as is often the case only a few days before death, it may continue with little change to the end; in other cases, the pain and tumefaction disappear altogether before death; or they may leave one joint to attack another.

It is, however, important to remark, that, although the pain and swelling may somewhat subside, the disease never passes suddenly from one joint to another, as occurs in true rheumatism. Several large joints may suffer in succession; but, after death, we always find some lesions in or around the joint first attacked. In other cases some change in the colour of the skin is found, superadded to the pain and swelling. The skin may be hot and red; it is often of a dusky red colour, especially about the knuckles and wrists. In many of these cases the affection is probably confined to the periarticular tissues; whereas, in ordinary diseases of the joints, the matter which surrounds the joint is derived from its cavity; in secondary diseases the pus hardly ever comes from the interior of the joint. I am acquainted with two cases only in which perforation of the cavity of the joint had taken place. These periarticular effusions, then, may be of two kinds. Sometimes the effusion is serous, and subsides to a considerable degree before death; or pus has been effused into the cellular tissue outside the joint, either with or without symptoms of local inflammation.

I am quite unable to determine the circumstances which give rise to these differences, to explain why the effusion is purulent in some cases, serous in others; why it takes place now *in* the joint, at another time *outside* it. Moreover, the kind and seat of the effusion bear no relation to the gravity of the case, or to the intensity of the local symptoms.

The joint-affections are frequently accompanied by abscesses in the muscles of the legs and arms, preceded by pain and attended by doughy swellings. When these occur in puerperal women they should always excite attention, for they are too often the forerunner of purulent infection of the blood. The changes discovered after death are purulent effusion into the articular cavity without any alteration of tissue; frequently signs of synovial inflammation with erosion and ulceration of the cartilages; more frequently still purulent or serous infiltrations outside the joints, with abscesses in the neighbouring muscles. In no case have the bones been found diseased; in no case, likewise, are the lesions confined to the joints; yet in a few cases the joints and intermuscular tissue have only been affected.

The other lesions are those of purulent infection: viz., secondary deposits in the lungs, liver, &c. The brain has not been found affected, as far as I am aware. Pus is always found either in the veins or lymphatics of the uterus; or there is primary abscess in the walls of the uterus, in the cellular tissue of the pelvis, in the symphysis pubis, or elsewhere.

Practitioners are now agreed that the puerperal disease of the joints depends on blood-poisoning. The only question on which difference of opinion exists is, as to the nature of the poison. Is it pus? Is it some morbid secretion or putrid element introduced into the blood? My own opinion is that these secondary joint affections, as well as many others, are caused by purulent poisoning of the blood.

1. In the large majority of cases purulent phlebitis of the parts originally affected has been observed after death. This holds good especially for cases which occur in connection with puerperal fever. The careful observations of M. Tonellé, at the Lying-in-Hospital in Paris, place the fact beyond doubt, and show that, although these secondary joint affections and the general symptoms which accompany them never take place without having been preceded by primary suppuration, purulent phlebitis, and primary suppuration of the cellular tissue do not necessarily

give rise to them. The pus poisoning and secondary deposits are an occasional but not a constant effect of the phlebitis and primary abscesses. Thus, in two hundred and twenty-two *post-mortem* examinations of patients who died from puerperal fever, M. Tonellé found suppuration of the veins or lymphatics of the uterus in one hundred and thirty-four cases; yet of these, ten cases only furnished examples of secondary articular disease.

2. In many cases where pus has not been found in the uterine veins or lymphatics, it has been found in other tissues; and the very few cases related where no pus was found show either that the *post-mortem* examinations were imperfectly conducted, or that the temporary secretion of pus might have been fairly inferred from the symptoms during life.

3. The presence of vitiated and putrid secretions in the uterus does not account for the disease. It is not produced by retention of the placenta after abortion. It does not occur (unless phlebitis exists) in the form of puerperal fever, which is characterized by putrescence and softening of the uterus. It is not produced by the ingestion of putrid animal substances into the stomach.

4. The disease occasionally occurs in females without any of the accompanying circumstances of the puerperal state. Yet in its course, symptoms, and termination, it does not differ from the form which occasionally accompanies puerperal fever, the only modifications being those which arise from the presence or absence of the puerperal fever itself.

I do not deny the pernicious influence of vitiated secretions; but I maintain that all observation and analogy establish the doctrine that, unless these secretions excite purulent phlebitis, or give rise to primary deposits of pus in some of the tissues, they are not followed by the train of symptoms known under the name of pyæmia.—*British Medical Journal*, *March* 6, 1858, *p.* 188.

132.—ILLUSTRATIONS OF THE RECIPROCAL SYMPATHIES BETWEEN THE UTERUS AND BLADDER IN WOMEN.

By Dr. W. F. Montgomery.

It is familiar to us all, that in the human female, there is an intimate reciprocal sympathy between the uterus and bladder, and other parts of the urinary apparatus; so that, under a variety of circumstances, when the former organ is the seat of any anomalous action, or brought into a state of exalted sensibility, whether from natural or morbid causes, the latter is not only liable, but very apt to sympathise, and suffer correspondingly.

This is constantly exemplified in the increased urinary irritation so often accompanying ordinary healthy menstruation, and still more remarkably, when the latter function happens to be painfully performed. Again, in early pregnancy, the same thing is observed; and the remark is trite, that morbid actions in the uterus, whether benign or otherwise, often have the earliest announcement of their invasion in symptoms of disturbance first noticed in the functions of the bladder.

Thus, congestion or slight ulceration of the cervix uteri, and still more strikingly, malignant affections of that part, frequently excite, in the first instance, in the patient's mind, only apprehensions of gravel, or some vesical disease, for which alone she is induced to seek advice; but woe betide us, in this and many other circumstances, if we let ourselves be beguiled into the belief that because a particular organ or locality is affected with certain anomalous symptoms, it is therefore the seat of some disease, of which these symptoms are to be taken as indications; and so prescribe. Could we, for instance, expect to cure the itching of the nose and angle of the eye which accompanies the presence of intestinal worms, by applications to the Schneiderian, or conjunctival membrane?

Mrs. C. had, for a long time, intense, intolerable, distracting itching of the perineum and anus, which really rendered her life miserable, and for which she had consulted many, and used a multiplicity of remedies: many of them, no doubt, very appropriate for *pruritus*, but *not for her*. When she came under my care, I also, at first adopted the wrong course; I prescribed *for the symptom*, and *not for its cause*. But fortunately, after seeing her a few times, something led me to suspect the

existence of intestinal worms. I gave her a dose of the Kousso, which caused the expulsion of some very large lumbrici, and all her troubles were forthwith at an end.

Mrs. M. consulted me for pruritus of the pudendum, from which she suffered to such a degree, and it was accompanied with other symptoms of so distressing a kind, that she declared she loathed herself, and felt her life an intolerable burden to her. She had used gallons of lotions, and all sorts of ointments, without the slightest relief. Examination showed an intense congestion of the cervix uteri; this was made the object of treatment, and on its removal, the pruritus and all its miserable concomitants totally ceased.

I have already called the consent between the uterus and bladder a reciprocal sympathy, because it equally acts in the reverse direction, irritations of the bladder being frequently found to influence and disturb the functions of the uterus—a fact which should not be forgotten in practice, and especially in the treatment of the diseases of pregnancy, when the administration of the more irritating diuretics should be avoided, lest they should excite contraction of the fibres of the uterus, and so induce premature expulsion of its contents. That they are capable of so doing is, unfortunately, popularly known, and advantage is taken of such knowledge for base and wicked purposes.

And again, we must remember that vesical disturbances may produce a group of symptoms so closely resembling those arising from disease of the uterus, as to be mistaken for them.

Several years ago, there occurred in this city a case forcibly illustrative of this, and which excited no small sensation. The wife of a general officer, at that time holding the highest military command in this country, began to complain of distressing symptoms, having all the characters of those produced by uterine disease. Such was her own conviction, and on her consulting an accoucheur, then in large and high practice, her worst fears were confirmed: he pronounced the affection to be cancer uteri, and could only promise palliation. But she had many anxious friends, whose happy privilige is always to hope for the best, and some of them urged upon her the necessity of having another opinion; to this she at last consented, and the gentleman called in pronounced the case to be one of stone in the bladder; the stone was extracted, and the lady passed at once from a state of pain and misery to one of comfort and happiness.

A few years since, a patient came to consult me, stating that, to gratify her friends, she had come to town for my advice, although quite aware she could not be cured. She also handed me a written statement of her case, which set forth that she had had seven labours of terrible severity, owing to contracted pelvis, always requiring instrumental delivery; that for some months she had exhibited unequivocal symptoms of the existence of cancer uteri; and I confess, that from this account, and the woman's own description of her symptoms, I thought there was little room to doubt as to the nature of her malady. However, I, of course, gave no opinion, and suspended my judgment until I should have instituted a careful examination; on doing so, I could discover no disease of the uterus, but the neck of the bladder was distended and felt very hard. I passed a sound into it, which at once struck against a stone of considerable size. Mr. Fleming now saw the case with me, the stone was removed, and the woman soon returned home well, and continued so.

It is not my intention to enter into a lengthened exposition of all the details of this part of our subject, but only to ask attention for a few minutes, while I review, as briefly as may be, some forms of disturbance of the functions of the bladder occurring at the time of labour. And I may just premise, that considering the frequency with which we witness such interchange of sympathies as we have been hitherto discussing, and their production, in many instances, from comparatively unimportant causes, we would anticipate from the close relation of juxtaposition between the uterus and bladder, and from the direct exposure of the latter organs to the powerful mechanical efforts of the uterus, as well as from the marvellous anatomical and physiological changes taking place in the latter, during pregnancy and parturition, and immediately after, we would, I say, be led to expect that the innervation and powers of the bladder would be likely to exhibit still more marked and decided evidences of impairment, or some other abnormal

condition in the puerperal woman, and accordingly, in practice, we find that there are, at least, four forms of disturbance of the functions of the bladder, which are not unfrequently produced by parturition, even when that process is easy and natural;

1st. Irritability, causing an inconveniently frequent desire to discharge its contents; and this with a certain amount of pain.

2nd. Loss of expulsive power; the natural sensibility being unaffected.

3rd. Total loss of the natural sensibilty, or irritability, which prompts to the evacuation of the contents of the organ.

4th. A peculiar form of hysterical retention.

The first two of these states require little more than to be glanced at; the third and fourth demand a somewhat more particular consideration.

1st. The irritability of the bladder which succeeds labour, almost always yields readily to soothing measures, such as warm anodyne fomentations, a linseed meal poultice, opiate and camphorated embrocations, an opiate suppository in the rectum, or the administration of the mist. camphoræ c. magnesiâ, with tincture of hyoscyamus and syrup of poppy. Should there be reason for suspecting inflammation, it may be necessary to apply a few leeches, and use other appropriate remedies; but this is rarely the case.

2nd. When the expulsive power is in abeyance, but the natural sensitive irritability remains unimpaired, the desire to evacuate the contents of the organ becomes distressingly urgent, in proportion to the amount of accumulation within it.

This condition is sometimes produced by pressure from the uterus happening to be larger or lower than usual, perhaps displaced, or from the presence of an uterine tumour, in which case, raising up the obstacle may remove all difficulty. Sometimes, merely permitting the patient to assume the sitting position may suffice. Should these plans not succeed, the introduction of the catheter gives the desired effect.

3rd. Again, there is the third and most important variety, in which there is no irritability, not even the natural desire to evacuate the urine, nor sensation, nor consciousness of requiring to do so, although a large accumulation is taking place, which will soon produce symptoms, not alone very distressing in themselves, but, what is worse, conditions which may lead us greatly astray, and excite groundless apprehensions of great impending danger; and it will not lighten our discomfort, should it turn out, as has often happened, that the patient owes all her annoyance to our inadvertence, or to the carelessness of the nurse-tender; for if we are careful in making the requisite enquiries, and give the proper directions to the nurse, and she attend to them, the accident, of which I am about to speak, *could not happen.*

The first time I remember to have had my attention drawn to this condition was in the year 1832, and in the case of an esteemed medical friend's wife, who was delivered of her first child, after a natural labour of fifteen hours, presenting nothing unusual, if we except the most tremendous rigor I ever witnessed, which occurred shortly after delivery, and was so violent that I really thought it must have ended in convulsions; but simple means removed it, and she went on well. Before leaving her, I cautioned the nurse to encourage the lady to pass water in the course of the evening, as she had not done so for several hours; this, however, was neglected, as the lady neither expressed nor felt any want, and, at my next visit, I found my patient very feverish, with headache; a pulse above 120; the belly tumid and tender to the touch. Before proceeding to introduce the catheter, of which she had a great horror, I advised her trying to pass water, which she did, to the amount of at least two quarts, with instant relief to all the symptoms. Her convalescence was uninterrupted.

At a time when there were occurring several cases of puerperal fever through town, a medical friend called on me to request that I would accompany him to visit a patient of his, who had been confined two days previously, after a severe and protracted labour. She was not going on well, and he thought he had to deal with a case of the above-mentioned formidable disease, as his patient was very feverish, had most distressing headache, a rapid pulse, with abdominal pain, swelling and tenderness. On seeing her, I thought the presence of a large quantity of fluid was beyond doubt; a catheter was introduced, and an enormous

accumulation of urine withdrawn, with immediate and decided relief to all the symptoms. It was then ascertained, that she had not passed water since her confinement, nor for many hours before it; she recovered perfectly.

The next case occurred to me under circumstances which invested it with a very unusual interest, and caused it to make a great impression on me. I happened to be staying for a few days in a very fashionable watering-place in England, where there resided a family of great wealth and consideration in society; the eldest son of which had married a lady of large fortune and high connection. This lady had recently been confined of her first child, and, as may be readily supposed, the attendance upon her had been a matter of warm ambition among the local practitioners; and the gentleman who carried off the prize was, I fancy, more envied than congratulated by his confreres.

I met this gentleman accidentally in society, and the following morning he called on me in a state of painful agitation and distress; "I am," he said, "in a terrible dilemma, and fear I am a ruined man." He then proceeded to tell me that he had attended Mrs. —— three days before; that she had rather a severe labour; and that at the end of thirty hours, finding the labour not likely to terminate by the natural efforts, the head having remained stationary for several hours low down in the pelvis, and pressed strongly against its floor, he had delivered her with the forceps, without, as he assured me, any difficulty whatever. All then seemed well; but next day the lady was uncomfortable, restless, feverish, and rather larger than she ought to be, and this state went on increasing until the third or fourth day, when to his horror, the urine began to trickle away incessantly, and a slough, about the size of a sixpence, was discharged from the vagina. He at once, naturally enough, concluded that a vesical fistula was established; and I, taking his account as my guide, thought there was but little doubt that his worst apprehensions would be realised.

At his urgent request, I accompanied him to visit the lady, whom I found with a hot skin, much headache, a very quick pulse, a very distended abdomen, which was moreover so tender that she could hardly bear it to be touched; but I distinctly ascertained the presence of fluid. On examining *per vaginam*, I could not detect by the finger any breach of surface along the anterior wall, or back of the bladder, and I suggested to Mr. —— that it would be well to pass a catheter into the bladder, which, at his request, I did, and gave exit to a quantity of urine sufficient nearly to fill an ordinary wash-hand basin. Subsidence of the abdominal swelling immediately took place, the lady felt inexpressible relief, and from this day went on well.

The truth was, the bladder had been forgotten by all the parties concerned; and the patient had never passed water since her confinement, nor felt a desire to do so; until at last the bladder become so distended, that the resistance at its neck was overcome, and the urine leaked out at the front as fast as it was pumped in from the ureters at the back: and it so happened that, just as this began, a small slough had separated from the mucous membrane of the posterior wall of the vagina, which had been strongly pressed on by the head for several hours.

4th. Another state, not exactly ranging under any of the former kinds, seems to be of a purely nervous or hysterical character, and mixed up with a certain amount of *mauvaise honte*. The patient has a decided desire to pass water, and suffers distress from its retention; but has at the same time, the greatest reluctance to make the necessary effort, and *positively refuses to try, if any one, even the nurse-tender, is present*, declaring that it would be impossible for her to succeed.

Under these circumstances, suitable arrangements should be made by the nurse, and the patient then left by herself, for a time, during which she may succeed in accomplishing the desired object; if she does not, some anti-nervous medicine should be given, with strong assurance of its potency in removing such difficulties; let her try again during our absence, and if she has not succeeded when we come to pay our next visit, we must declare that longer delay would be unsafe, that we will wait a little while in the drawing-room, and if she does not then succeed, we must draw off the water before we leave the house; this generally ensures success.

In many of these cases they do not succeed, because they do not make the proper effort; and this, I believe, is oftentimes, simply because they cannot, and not

always because they *do not choose;* this state of nervous inability ought to meet with much tender consideration. I may observe here, that I have never met with this peculiar form of affection, except in the higher grades of society, and almost always in women of a highly sensitive nervous temperament, some of them having experienced a similar difficulty before marriage, and also under ordinary circumstances, distinct from pregnancy.

Now, is this state which I have just been attempting to describe, analogous to or identical with another, which I have a few times met with in practice, and which may be thus described?—A lady in perfect health, retires to her bedroom for the night, and before lying down to rest, attempts to make water, and finds she cannot—she is much surprised—goes to bed, and perhaps falls asleep; in the morning, she is in great distress, but still unable to empty the bladder, and now her pain is so great that she is compelled to seek for assistance—the catheter is introduced, and all her trouble is at an end; or, perhaps, for several days, its use continues to be required, and then all goes on as well as ever; but, in either case, no circumstance of general ill health, or local derangement or displacement, can be discovered. The woman, in fact, is otherwise quite well.

The year before last a married lady of a highly nervous temperament, so affected, drove six miles into town to my house, in great torture: I drew off the water, and she required no further assistance.

Last year I was urgently summoned to see an equally nervous maiden lady similarly situated; on laying my hand on the abdomen, I felt a tumour, as large as a melon, and as hard as a cricket-ball; and *per vaginam*, it really, at first, suggested the idea of a fibrous tumour of the uterus, this organ being quite displaced. I introduced the catheter, drew off a large accumulation of urine, and the abdominal tumour—which was nothing more than the distended bladder—at once disappeared. The feature in this case which particularly arrested my attention was, the extraordinary hardness and the distinct outline of the abdominal tumour, which would readily have caused it to be mistaken for a solid morbid growth.

I may here observe, that in the well-known case of the virgin mock prophetess, Joanna Southcott, there was felt, by competent judges, a circumscribed tumour in the abdomen, which was supposed to be the gravid uterus. Dr. Reece, in his published history of the case, says—"In that part occupied by the womb, there was a firm circumscribed tumour as large as a man's head, bearing the shape of the womb; I have no doubt of its being an enlargement of that organ." But when she died, no tumour existed, and that which was felt during life was attributed to the prophetess having learned to retain the urine until the bladder became considerably distended; which seems highly probable.

In my case last related, it was necessary to relieve the lady every day for a week; when she perfectly regained the power of micturition. I may just mention, that the remedy which seemed to remove her inability was the ergot of rye; did it do so by stimulating the fibres of the uterus in the first instance, and then, by consent, those of the bladder? Perhaps so, but as the same agent has produced a similar effect in men, a direct influence may be equally admitted.—*Dublin Hospital Gazette.—Edinb. Med. Journal, March* 1858, *p.* 841.

133.—*Quinine in the Salivation of Pregnancy.*—Dr. Mauthner relates that he has found sulphate of quinine, given in two grain doses, prove completely efficacious in cases in which various other means had been tried without success.—*Schmidt's Jahrb.—Med. Times and Gazette, Nov.* 14, 1857, *p.* 511.

134.—THE PHYSIOLOGY, PATHOLOGY, AND THERAPEUTICS OF THE MOTOR FUNCTIONS OF THE UTERUS.

By Dr. H. Hannotte Vernon, Physician to the Great Northern Hospital; formerly Resident-Accoucheur to St. Mary's Hospital.

[Strychnia appears to be quite new as an agent for exciting the motor functions of the uterus. The following are the circumstances which first led the author to employ it:—]

I was summoned one evening to attend E. H., an out-patient of the maternity department of St. Mary's Hospital. She was about thirty years of age, and the mother of three children; her previous labours had all been slow. Her temperament was leucophlegmatic; complexion fair; muscular system flabby; pulse slow, very small and compressible. A more flabby atonic person I hardly ever saw. On examination per vaginam, the passages were found to be cool, moist, and very relaxed; the os uteri was already somewhat dilated, soft, thin, and *dilatable*. The presentation was natural. The pains came on about every five minutes, and the bag of membranes, which was unbroken, became somewhat tense at each contraction; but the uterus acted very inefficiently; each pain was not only very weak but very short. After waiting about an hour, I returned home, as no progress whatever was made. In the course of the night a messenger called me to her again, and I found things exactly in *statu quo*. As no progress was made during an hour's patient expectancy, I went home again. Two or three visits were made the next day, and still there was no advance whatever; no alteration in the character of the uterine contractions; no change in the position of the fœtal head, or in the condition of the maternal passages. My patient had pains now and then; she alternately dozed, ate and drank, and appeared only a little fretted (as much as her lethargic nature would permit) at the duration of her labour. About 10 P.M., I made a visit; and, while sitting at the bedside cogitating upon the disagreeable prospect of another night's devotion to the goddess Lucina, and feeling rather in a "rusticus expectat, dum defluat amnis" state of mind, I ran over to myself the different ways of exciting the uterus to act, and the *modus operandi* of the agents used for that purpose. Nearly all the means which occurred to me, except ergot of rye, resolved themselves into eccentric irritations of the spinal nerves. The ergot appeared to me inadmissible, as the os uteri was not so far dilated that I could hope to procure delivery within the short limit of time which I thought imposed by regard for the safety of the fœtus; and I did not like to alter the labour from the natural by rupturing the membranes. But what if, instead of employing eccentric spinal irritation, I could exalt the polarity of the spinal cord itself, and leave the natural excitor stimuli to their usual mode of operation? It was clearly a case of diminished irritability of the nervous centres, and particularly of the spinal cord. The next question which presented itself was —what agents do we possess capable of exalting the polarity of the spinal cord? The readiest answer to this was—strychnia. Persuaded that I had found the key to my difficulty, I went home and procured a solution of strychnia in very dilute hydrochloric acid, of the strength of one grain to the fluid ounce. On returning to the case I administered one-sixteenth of a grain of strychnia in half a wineglassful of water. In a little more than ten minutes the pains increased in frequency and force; but in fifteen minutes more they subsided again somewhat. The same dose was repeated, and in a short time the uterine contractions again became exacerbated and hopefully persistent; the fœtal head, too, was lower in the pelvis. Nearly forty minutes had now elapsed since the first dose. A third was now given to the extent of one-fifth of a grain, and in about fifteen minutes more of the membranes were ruptured in consequence of the severity of the pains. The labour was terminated in less than an hour and ten minutes from the exhibition of the first dose of the strychnia; the uterus contracted firmly after the expulsion of the placenta, which took place spontaneously; there were no excessive after-pains; not a single bad symptom appeared; and both mother and child did extremely well. The whole amount of strychnia given was seven twenty-fourths of a grain. The result was very gratifying, because here the patient had been at a stand-still for nearly thirty hours; there was no advance whatever in that time, and no promise of advance; she might have travailed for thirty hours more if nothing had been done. It was still more satisfactory, because I felt that, by the application of the known physiological action of the drug, I had procured, with perfect safety, a new therapeutical result. By the application of physiological knowledge the boundaries of obstetric art had been somewhat extended.

Since the above case occurred I have used strychnia in eight cases; care has always been taken to select cases of *pure atony*. On no occasion have I ever resorted to strychnia in order to overcome an obstacle, however small. Believing that oxytocics are *never* permissible, except to promote uterine contraction

when it is below the natural standard of force and frequency, I never use them except for the remedy of such conditions. Cases of atony, moreover, vary very much in their nature; inertia of the uterus from fatigue ought to be met by rest and diffusible stimulants; from mental preoccupation, by diversion or anæsthesia, and so on. It is by no means justifiable to lash the uterus in every case of inertia into action, by direct stimulation of either the uterine ganglia or the spinal cord.

For these reasons the number of cases in which I have felt it proper to use a remedy of so powerful and definite a nature as strychnia has been small. The result of nine cases of *pure inertia uteri* has been as follows:—

1. In every case the mother has done well.
2. In every case the child has been born alive; and has, to the best of my knowledge, suffered nothing from the exhibition of the drug.
3. In one case only have the uterine contractions been at all immoderate; and in that instance a glass of spirits was given to the patient at her own urgent request: so that all the exacerbation of uterine contraction was not attributable to the strychnia.
4. The dose given has ranged from one-eighth of a grain to one-third variously divided.
5. The pains have been visibly augmented in force, frequency, and duration, within periods ranging from eight to twenty minutes.
6. Labour has been accomplished within one hour and a half in every case from the first dose given. The longest was one hour and twenty two minutes. In three cases the drug was given in strong tea without the knowledge of the patient.

It is not pretended that these nine cases are conclusive as to the value of strychnia in obstetrics. It may yet remain to discover that there are cases in which it is not admissible, but which are yet cases of pure atony—defective polarity of the spinal cord. But in any nine cases of ergotic labour which have fallen under my own observation, I am persuaded that I have seen more inconvenience than in the nine cases in which I have administered strychnia.

In the 'Lancet' of June 14, 1856, I published a short letter in which I incidentally referred to the use of strychnia as an oxytocic. Curiously enough, a letter from Dr. Matthew Corner appeared in juxtaposition with my own, detailing a case of poisoning by strychnia. The patient swallowed two grains of strychnia by mistake. She was pregnant, and aborted in the course of the action of the poison. The case terminated favourably. I have since become acquainted with the case of a lady who aborted five times consecutively whilst under the influence of nux vomica given as a tonic.—*British Medical Journal*, *Jan.* 2, 1858, *p.* 8.

135.—ON THE TREATMENT OF INFANTILE HYDROCEPHALUS BY ELASTIC PRESSURE.

By Richard Phillips, Esq., London.

[Five and thirty years ago it was known that it was possible to get rid of encephaloid effusion by mechanical pressure; probably the difficulties attending the methods hitherto used have prevented the use of this agent in treatment.]

In the hydrocephalus of infants, when once the soft union of the cranial bones yields to the expanding influence of the fluid within the brain, I believe the progressive increase of the effusion is mainly attributable to an atonic, passive condition of the meningeal vessels, resulting from the absence of that resisting medium offered by the healthy, normal calvarium. Truly this is but a *post hoc* by hypothesis; still, inasmuch as it explains very satisfactorily the principles on which my treatment is based—viz., pressure, or *active resistance*, there seems to me no good reason why it should not be advanced. Ordinarily, in this disease, effusion goes on gradually increasing till a limit is reached of the distensibility of the dura mater, or till death from internal structural lesion ensues. In the former instance, the absorbents, flaccid or paralyzed, or in some way rendered

useless, are unable to dispose of the percolated fluid, when the whole mass of brain, serum, and distended membranes, becomes consequently encased by an extension of ossific deposits, and the poor patient lives on, an object of lasting pity, most probably utterly helpless, having a head vastly disproportioned in size and weight to the power of the muscles appointed to direct its various movements, and which cannot therefore maintain (or if so, with the greatest difficulty) its centre of gravity on the spinal column, its natural support and fulcrum of leverage.

Case 1.—Mrs. T——'s infant, whose head had been subjected to severe pressure at birth, owing to the early rupture of the membranes whilst the os uteri was in a rigid, undilated state, rendered necessary by flooding from a partial placental presentation. This child, two days after birth, appeared to be in great pain, which was attributed by the nurse to the bowels not being cleaned of the meconium. A little ordinary medicine was given for this purpose, but without any relief to the child's sufferings; for, at short intervals, its screams continued day and night. My attention was now attracted by a heat and redness of the scalp, and an apparent enlargement of the head. The latter in a few days became more obvious; the vessels of the scalp more engorged; the eyes fixed downwards, and having a tremulous motion, and the stomach so irritable, that but little food could possibly have been retained in it. Day after day the enlargement continued to increase rapidly, the sutures gradually yielding to the hydrostatic pressure from within, so that by the end of a fortnight, I could place my ring finger between the division of the frontal bone, along the longitudinal and also the lateral sinuses; even the nasal bones had a space between them. At this time the operation of tapping was proposed, but the poor child's powers seemed so entirely exhausted, that the father (a retired surgeon), after much deliberation, preferred that his child should take its chance of living or dying in a natural way, to subjecting it to an operation. In this view my own judgment entirely coincided. Three days later the appearance of the little sufferer was most revolting, the scalp distended to its utmost limits, shining, and livid from venous congestion; the eyes were directed downwards and inwards below the axis of vision, and constantly oscillating; the limbs perfectly emaciated and shrunken, and the countenance wearing the expression of a seven months' hydrocephalic fœtus. There was still left a slight power of suction, but the stomach remained equally irritable, and the child kept constantly screaming. The tension of scalp was at this time so great, that it was difficult to divest oneself of the apprehension lest the whole mass should suddenly burst, and thus terminate a scene too distressing to contemplate.

Partly with the view of inducing absorption of the fluid, but chiefly with the hope of preventing the threatened catastrophe, I constructed an elastic loop, or fillet, with strong india-rubber webbing, two inches wide, with which to encircle the head. Having made the fillet purposely too small in the girth, I was enabled, by stretching it with both hands from within so to adjust it as to exercise a considerable amount of well-regulated pressure round the distended cranium. A cold spirit lotion was also applied frequently to the heated scalp, and the head directed to be supported by a pillow.

On the third day after adjusting up the elastic fillet, the nurse informed me that the band had become loose, and which I thought might probably arise from the effect of heat on the caoutchouc; but on a close examination, it was obvious that the cranial bones had approximated each other, and that there was less tension of the scalp. I now had the fillet taken in to the extent of an inch and a half, stretched it, and put it on again.

In three days more the band was observed to be quite slack, and I had the gratification of finding the different bones had almost been brought into contact; that the scalp was slightly wrinkled; the eyes again visible, and less tremulous, and the general aspect of the child greatly improved. The fillet was again taken up, re-adjusted, and allowed to remain on another fortnight; by which time the bones had positively overlapped each other considerably, forming prominent ridges in the situation of the different sutures. The eyes would now follow a lighted candle in any direction, and had but little of the vibratory, oscillating motion which had been so conspicuous throughout; the stomach retained all the food,

and the child, showing no signs of pain or distress, gradually gained flesh, and became more vigorous.

Union having apparently taken place between the cranial bones, except, of course, at the fontanelles, which were not however, larger than usual, I conceived all that simple pressure and mechanical support could effect had been obtained, so the fillet was removed, and directions given to sponge the scalp frequently with an evaporating lotion.

Eight months after birth the condition of the child was as follows: The head certainly somewhat larger than that of a child of a similar age, but moves easily at will in all directions; the ridges produced by the over-riding of the bones are fairly levelled off, and the sutures feel smooth and even; the anterior fontanelle is depressed below the level of the adjacent parts, and but little hair has grown on the scalp. The child exhibits in a diminished degree the ordinary marks of mental development, but there is left a slight strabismus, and quivering motion of one eye; the limbs are tolerably well developed, and the flesh feels firm and healthy. After a short course of iodide of iron the eye became steady, but the squint remained. It seemed probable indeed that all the fluid was not absorbed, but that the portion still left may possibly be necessary to afford the required support to the brain till the unnatural sized cranian case became filled by the gradual growth of the organ. I therefore determined to let well alone, taking care to give every facility for increasing the child's constitutional vigour in every possible way.

All has gone on well with the case; the boy is now ten years of age, has gone through the catalogue of the diseases of childhood, in addition to a series of clonic convulsions for twenty-four hours, after swallowing some india-rubber, but which ceased as soon as the substance passed in a semi-dissolved state. He is chiefly distinguished from his brother by being a little more headstrong and impetuous, and having a slight cast in one eye.

Case 2.—J. W——, a twin child, of the age of three months, had a febrile attack, with great heat of scalp, marked scantiness of urine, irritability of stomach, constant screaming fits, and slight convulsions, with the head thrown backwards upon the pillow. The head, according to the mother's account, soon began to enlarge; and, at the age of six months, when I first saw the case, measured twenty inches in circumference, the parietal bones were separated from each other, and from the frontal and occipital bones, to the extent of a quarter of an inch, the anterior fontanelle was raised and fluctuating, the eyes were depressed below the margin of the lower lids and tremulous, and the whole trunk and extremities in a state of great emaciation; the abdomen swollen and tympanitic.

The elastic fillet was adjusted as in the former case, the bowels cleansed by mild mercurials and caster oil, and a course of iodide of iron prescribed. The size of the child's head, in ten days, began to diminish, and the edges of the bones to approximate each other; the eyes became by degrees more visible and less tremulous; the heat of scalp greatly lessened; and the irritable state of the stomach perfectly tranquil. At the end of three months there was a firm bony union at the different cranial sutures, the head had assumed a conical form, but the fontanelle was quite flat; the eyes had regained their proper position as to elevation, but there was slight strabismus and oscillation of the globes when the head was moved. The child had now also considerable power of moving its head into the upright position, and that for the first time; the limbs had become plump and fairly vigorous. It would notice objects as much as other children of its age; and, instead of being cross-tempered, irritable, and restless, had become remarkably amiable, and a tranquil sleeper.

It may be well here to mention, that owing to the more advanced age of the child, there was some difficulty in preventing it from slipping off the fillet with its fingers, and that it became necessary in consequence to secure it by cross-bands over the vertex, and a chinstay below.

One or two inferences have occurred to me in the treatment of the foregoing cases which it may be as well, perhaps, to mention as bearing on the particular time when success may most reasonably be hoped for.

1st. It would appear that when hydrocephalus is progressing in young infants, the process of ossification in the cranial bones goes on with supernatural rapidity, as if nature were eager to protect the all-important centre of life as quickly as pos-

sible, unduly exposed as it is, under present circumstances, to external injury; the consequence of which is, that after the edges of the bones have been brought together, and union taken place, the circumference of the head still remains considerably larger than would have been the case had there been no disease. *The earliest possible age, therefore, and where the case is not of long standing, are, I conceive, the conditions most favourable to the treatment by pressure.*

2nd. That although when we have succeeded in approximating the bones, and maintaining them in that position long enough to effect their intimate union, there is reason to believe there may yet remain more or less unabsorbed fluid in the ventricles, as evidenced by the tremulous state of the eyes and an abnormally large cranium, this is not nevertheless to be regarded as an unsatisfactory result, inasmuch as it was perfectly evident to me, when observing the progress of Case No. 1, that in proportion as the encephalon became developed synchronous with the body's growth, so the remaining fluid in the ventricles was gradually absorbed and disposed of, in consequence of the increased pressure within the cranium; the bones being now fixed just as the larger portion of fluid had been influenced by the sustained pressure *ab externo*.

In Case No. 3, the head is now much larger in proportion than was the case with the first child at the same period of its history, which I attribute to the circumstance of the cranial bones having had time to radiate by ossification to a more extensive circumference before the treatment was commenced; but the *concave* state of the fontenelle, the firm union of all the bones, the cool state and natural colour of the scalp, the lessening of the strabismus, the rapid development of the mental faculties, as well as the progressive growth of the limbs and frame generally,—all lead me to conclude that it is following precisely the same course as did Case No. 1, and that in due time the cure will be in every respect as complete and satisfactory in one as the other. I deemed it right in this case to give a course of iodide of iron, because the child was so pale and anæmic (scalp excepted) when first brought to me. It had for some weeks been under treatment in very competent hands, and was considered to be in a hopeless state when placed under my charge. This I mention to show that even in what seem to be the most unpromising cases there is good reason to anticipate the happiest results from the peculiar form of treatment here so imperfectly advocated and explained. Not, indeed, that I am presumptuous enough to suppose that all cases of infantile hydrocephalus are to be cured in future on the principles I have endeavored to enunciate; but with perfect truth it may be said, that a more exaggerated example of the disease than Case No. 1 could scarcely be conceived, neither would it be easy to select a more unpromising case, from length of standing and constitutional atony, for probationary experience than Case No. 2.

Sir Gilbert Blane (the authority before referred to) and others have treated, with partial success, cases of hydrocephalus by mechanical pressure, the means employed being bandages and adhesive strapping; but this is very different, both in principle and extent of power, from the sustained, well-regulated support and pressure obtained by the elastic fillet I employ. In the former there is all the inconvenience arising from the growth of hair on the scalp to be considered, and also the great probability that all the good we could reasonably hope for must be limited to a very short period after the strapping is applied; for as there is no elasticity in the material used, all pressure ceases as soon as diminution of bulk begins; whereas, in the latter mode, the pressure is kept up in a greater or lesser degree till the caoutchouc filaments have shrunk to their natural limits. The taking up and readjusting, too, of the elastic fillet, is an affair of but a few minutes, or even less still, if we are prepared with a proper succession of sizes; but the removal of a number of adhesive straps from the hairy scalp of a screaming child, and the careful readjustment of the same every twenty-four hours, is a process requiring almost the attributes of a Job, and a not over-sensitive state of the operator's *portio mollis*.—*Lancet, Nov.* 28, 1857, *p.* 543.

136.—M. Velpeau *on the Speculum*.—"La France Médicale" of the 13th February contains some clinical observations made by M. Velpeau, at the "Charité"

Hospital, upon a case of supposed malignant ulceration of the neck of the uterus. In the course of his remarks the lecturer stated that professional men generally overrated the diagnostic powers of the speculum; and that in nine cases out of twelve we can very well dispense with it. Both experience and reasoning tend to render the use of the speculum less frequent. This instrument, in fact, teaches us nothing respecting the volume, shape, position, or density of the organ to be examined. The only circumstance which it brings to light is the tint of the cervix, and the knowledge of this tint is often of no use whatever. The finger, M. Velpeau thinks, is far more useful; with it we make out ulcerations, granulations, fungosities, and the consistence of the cervix. Nay, the speculum often leads into errors of diagnosis, and makes us suspect lesions which have no existence. The neck of the uterus, caught by the extremity of the speculum, appears larger than it really is, and the os looks gaping; nor should it remain unmentioned, that a simple fold of the vagina is often mistaken for the cervix, and the caustic is applied where it was not intended to act. M. Velpeau, without rejecting the speculum, wishes, however, that its use may be considerably restricted, and that young practitioners should get accustomed to establish their diagnosis by means of digital examination.—*Lancet, March* 6, 1858, *p.* 243.

137.—*A new form of Cotton Wool Pessary.*—Mr. Walter Bryant recommends a new, simple, inexpensive, and very efficient form of pessary, devised by him for cases requiring uterine support, or the employment of medicated substances in the vagina. The pessary is composed of cotton wool, encased in a pyriform net. It is softer, less irritating, and far more cleanly than the sponge or caoutchouc pessary, and readily absorbs astringent or other solutions which may be prescribed. The mouth of the net is closed by a stout silk thread, which hangs through the vagina, and allows of the ready withdrawal of the pessary.—*Lancet, Feb.* 27, 1858, *p.* 217.

138.—*Sore Nipples*—A correspondent of known experience and judgment strongly recommends equal parts, by weight, of glycerine and tannin as the best application for sore nipples. It is also an excellent remedy for chaps and excoriations of other parts. The tannin dissolves readily in the glycerine.—*Boston Journal.—Med. Times and Gazette, Feb.* 6, 1858, *p.* 146.

MISCELLANEOUS SUBJECTS.

138.—ON THE ABSORPTION OF PUS CONSIDERED IN ITS RELATONS TO PRACTICAL SURGERY.

In the early periods of histological research it was a question of frequent debate as to whether true pus could ever be re-absorbed. A pus corpuscle was, it used to be asserted, too large a body to be capable of being taken up either by lymphatics or veins, and among theorists there was a strong disposition to maintain that serous fluids alone could be removed without breach of any part of their containing sac. This is now generally admitted to have been the most puerile logomachy. That pus corpuscles as such cannot penetrate unbroken membranes is certain, but that they may disintegrate, and after having thus been resolved into their molecular and fluid elements, that they may be wholly re-absorbed, is now acknowledged by almost all. The state of the case is with them exactly as it is with those of blood; and every one will grant that the latter fluid is easily susceptible of absorptive removal. Assuming, however, the general principle to be granted, there still remain several questions of great, and almost daily interest to us all in connexion with this matter, about which opinions are by no means unanimous. Does the absorption of purulent collections practically often occur? Under what circumstances may it be hoped for? By what treatment may it be favoured? When it does occur, is any injurious influence exerted upon the system?

In the hope of contributing data towards the solution of some of these, we have thrown together the following brief and very imperfect notes:—

And first, in reference to the frequency or otherwise of the absorption of large collections of pus, let us quote the opinion of an exceedingly clever pathologist and surgeon. "In the surgical treatment of large chronic abscesses, it used often to be tried to obtain cure without discharging the matter, by promoting (as was then thought) the absorption of pus. Bleeding or purging, vomiting or sweating, or other evacuations were had recourse to, and not infrequently the fluctuating tumour vanished. But this was only for a time. A large proportion of the serum had been withdrawn from the contents of the abscess, and these had been reduced to little beyond cells; but as soon as the blood had recovered its natural constitution, these cells (just like the nucleated cells of glands) again exerted their power, and surrounded themselves with their natural atmosphere. Accidental circumstances will often act like the treatment to which I have referred, and will reduce the fluidity of pus so that an abscess apparently vanishes; but the cells may remain quiescent for an indefinite time, and may presently again surround themselves with fluid blastema, forming the same amount of pus as at first. The perfect and permanent absorption of an abscess consisting not only in the removal of its serum, but in the destruction and dissolution of its corpuscles, so that the part shall retain no tendency to the re-accumulation of its previous contents; this, I am persuaded, is amongst the very rarest occurrences in surgical practice."—*Simon's Lectures.*

There is much truth in these remarks, although we cannot but think them too strongly put. Without admitting with Mr. Simon that the cells of pus tend to secrete around themselves a fluid blastema by any similar power to that possessed by nucleated gland-cells, there can be no difference of opinion as to the fact that the first stage in its absorption is the removal of its fluid, and that its solid constituents remaining behind give a great tendency to relapse. Do they not effect this more by the irritation of foreign material tending to relight the original inflammation? We do not speak of cases in which the serous part of an abscess has been partially drained off under the influence of violent diuresis, and the refilling of which, when the circulating fluid has been again supplied, is fully explained by the law of en-

dosmose, but of those cases in which the absorption has been slow, and coincident with improving health. In these latter is there not enough in what is known in the liability of all inflamed tissues to again take on the diseased action, especially when a permanent source of irritation remains behind, to save us from the necessity of assuming that pus-cells possess an active secreting function? But enough of speculation; let us pass on to the record of facts.

Note I.—Ophthalmic practice furnishes us with by far the best and most irrefragable examples of the absorption of pus. We recollect hearing Mr. Critchett declare to his clinical class at Moorfields, that he had over and over again witnessed the complete removal of undoubted pus from the anterior chamber of the eye. We mention his name only because we chance to have a clear recollection of a most positive expression of this opinion, not because he is at all peculiar in holding it. All ophthalmic authorities, we believe, admit the possibility of absorption of hypopyon. In not a few cases what is called pus in the anterior chamber of the eye, is, in reality, a mixture of pus and lymph, but still there can be no cavil, that it is not unfrequently a homogeneous fluid, capable of displacement by any motions of the globe, and in no respect distinguishable from true pus. As the cornea, in these cases, often retains perfect transparency, the progress of the absorption may be easily watched. It is often very rapid, almost as much so as that of blood. The only remark to be made as to the treatment which favours its absorption is, that it is usually that which subdues the inflammation which had caused its secretion.

Note II.—The absorption of fluid from inflamed glands is a very frequent occurrence. As to whether such fluid is pus or not, there is, of course, room to doubt. That it is so, however, in a vast majority of cases, few reasonable men will deny. How seldom do we, in using the lancet to a bubo, find its contents merely serous. Yet how often, after fluctuation has been plainly detectible, do we witness its disappearance without any evacuation. We published, some years ago, a note on Mr. Hilton's treatment of buboes, and stated that that gentleman held that absorption might almost always be procured. His method of treatment consists in the application, over the whole surface, of a saturated solution of nitrate of silver, containing a few drops of strong nitric acid. It is a most powerful counter-irritant, and usually vesicates sharply. The principle is the same as that adopted by many other surgeons. Mr. Lloyd, at St. Bartholomew's, for instance, often orders a blister over an abscess which it is wished to have absorbed, and the strong solutions of iodine are favourites with many for the same purpose. Both Mr. Hilton and Mr. Lloyd we have repeatedly heard speak most positively as to the practicability of procuring the absorption of the fluid from glandular abscesses, especially from venereal buboes. We have ourselves repeatedly known it to occur, and many of our readers will have, doubtless, also done the same.

Note III.—A lad was some years ago under Mr. Birkett's care in Guy's, on account of a large collection of fluid in the front part of the thigh. It was doubtful as to what was its cause, as there was no positive evidence of diseased spine, hip, or femur. That it was either of lumbar origin or an abscess in the cellular tissue, were the most probable conjectures. Mr. Birkett one day directed our attention to the case as an example of the absorption of pus, stating that there had at first been "half a pint, if any." Its removal has been slowly effected, nine months having been occupied in the process. The local treatment had consisted in painting the part with iodine. As absorption became complete, the parts around assumed an indurated and cicatrix-like condition. The lad had greatly improved in health whilst under treatment.

Note IV.—In cases of carious disease of the vertebræ, there is rarely any doubt as to the nature of the fluid secreted. It is almost invariably purulent. We can indeed scarcely suppose that extensive destruction of the vertebral bodies can take place without the formation of an abscess. Yet how frequently do we see cases of spinal curvature in which no scars exist! A very good example of this we made a note of in November, 1852. The patient was a man under Mr. Lloyd's care in St. Bartholomew's, for diseased ankle. He was bent double by an angular curvature of the dorsal spine, but the anchylosis of the bones had long been perfect, and he enjoyed good use of his limbs. There could be no doubt that the bodies of several vertebræ had been destroyed. He stated that the disease had

begun at the age of five, and that for some time he had been paralysed in his legs. He was quite certain that there had never been any discharge whatever from any part. We examined his back and sides carefully, and could find no trace of a scar. An almost precisely similar instance came under our notice at the Victoria-park Hospital, some years ago, in a man under Dr. Bennett's care for diseased lungs. In these, however, it may be alleged by the sceptical that there is no proof of an abscess having ever existed. The following is less open to doubt:—

Note V.—In 1856 we saw a young gentleman of delicate family who was invalided by supposed spinal disease. In his left lumbar region, just beneath the short ribs, was a prominent, freely-fluctuating swelling, and there was an angular prominence of the lower dorsal vertebræ. The disease had existed several months. A physician as well as another surgeon saw the case, and no one doubted as to the existence of a large collection of matter. Counter-irritants (nitrate of silver) were fully employed, and cod-liver oil and tonics were given. By slow degrees the fluid diminished, and at length finally disappeared. The patient is at present in very fair health, and although the angular projection of the vertebra still remains, yet he is so little inconvenienced that he is accustomed to enjoy very free exercise of all kinds. It is now more than a year since all evidence of the existence of matter ceased to exist, and there can, therefore, be little doubt but that the absorption is permanent.

Note VI.—A woman was treated under Mr. Hilton's care, in Guy's, about two years ago, for a peculiar form of contraction, with partial paralysis of the arm. An abscess, or, at least, a large collection of fluid, attended with surrounding inflammation, formed in the front aspect of her fore-arm. It was quite expected that this would have to be opened; but, contrary to what was looked for, it gradually subsided, and underwent complete absorption. Some months later the arm was amputated, and, in the site of the supposed abscess, was found still existing a small quantity of yellow curdy material, quite dry, and exactly resembling the remains of concrete pus. Mr. Hilton at the time directed especial attention to this interesting case, as affording one of the most indubitable instances of the absorption of an abscess which he had ever met with. There was every reason to believe that the removal, even of the cheesy matter, would soon have been effected had not the limb been amputated, since all inflammation about it had wholly passed away.—*Med. Times and Gazette, March* 20, 1858, *p.* 295.

140.—*A New Preparation of the Superphosphate of Iron and Lime.* By Dr. Routh.—This is prepared by dissolving phosphate of iron and phosphate of lime in equal proportions in hot metaphosphoric acid, and adding sugar to the solution to make a syrup. Some years ago Dr. Routh recommended the syrup of the superphosphate of iron (elsewhere known as the biphosphate of iron) as a remedy for weakly children, and those weak adults with mental disorders. Its uses as such had been since amply proved. He now recommended this as an excellent remedy in rickets and weak children with deficient osseous development. It was very pleasant to take, and did not blacken the stools. It was prepared by Mr. Greenish, of New-street, Dorset-square. Each ounce of the syrup contained five grains of iron and five of phosphate of lime.—*Lancet, March* 6, 1858, *p.* 250.

141.—*Mechanical Appliances.* Mr. Haynes Walton introduced an artificial arm, made for a man who had lost that member four inches from the shoulder. Instead of the usual material, wood, untanned ox-hide was used, which combined lightness with durability; moreover, a cast could be taken of the part to be fitted, to which the hide could be accurately moulded—a matter of no slight advantage. The sock which is fitted to the shoulder gives the man power to lift very great weights without inconvenience; the elbow-joint is fitted with a ratchet and spring, which admits of the forearm being placed at any angle or straight. The hand is a fine specimen of mechanism, supplied with springs in the two first fingers, which keep a pressure on the thumb, and so enable the

wearer to hold anything; the joints are flexible, and are so well made that it would be impossible to tell, when a glove was worn, that there was any counterfeit.

An artificial leg for amputation above the knee was then produced; it was remarkably light, and could be laced to the stump, so that adaptation could always be made. The action at the knee and ankle-joints were very artistic; no complication of india-rubber ligaments, or spiral springs—one small spring depressed by a leather bar, producing the action at the ankle. The strength and simplicity of these limbs guarantee them one of the greatest improvements of modern days.

The next was a leg for amputation close below the knee, in which a man could kneel, thus taking the whole weight of his body on the knee, relieving him of any galling tightness or chafing, which is common, according to ordinary methods.

Mr. Walton lastly introduced a new patent truss, with which he was particularly pleased. It consisted of a light steel band, covered in the ordinary way, to which was attached a pad working on a hinge, having at the lower end a lever and spring, by the action of which the pad is pressed directly backwards, and kept in close adaptation during all the movements of the body. The maker of these valuable articles is Mr. Newling, Park-street, Oxford-street.—*Lancet*, *March* 6, 1858, *p.* 250.

142.—THE METEOROLOGY OF 1856 AND 1857.

By J. A. Hingeston, Esq., Brighton.

In each year in which cholera has broken out in this country, the barometer has invariably stood at 30 inches, a little more or less, throughout the whole period of its continuance. This was the case in 1832. My attention was drawn to the circumstance from observing a high barometer with a cloudy sky, although I was not aware of the eventual importance of the observation I was then making. In 1853 this was remarkably the case: the disease was at its worst when the barometer was at 30 inches, and it declined in exact proportion as the mercury sank to 29·500 inches or thereabouts. I published an account of it in the 'Association Medical Journal,' No. xliii, October 21st, 1853. It was again the very same in 1854, according to a series of very careful observations that I made in that year, as well as from all that I could gather from the observations of others published on this interesting point. At p. 33 of the *Registrar-General's Returns* for the quarter ending September 30th, 1854, it will be seen that at forty-seven stations in England, Wales, Jersey, and the Isle of Man, where authentic observations were taken, the barometer stood at 30 inches, a little above or below, but chiefly at 30 inches, during September, when the disease was at its worst; and that subsequently, when the disease was declining, the returns from the same localities for the quarter ending December 31st, 1854 showed the barometer at a mean elevation of 29·740 inches, and occasionally as low as 29·600 inches. But the last year, 1857, which was so remarkable for its salubrity, the barometer oscillated between 28·500 inches and 30·578 inches—a difference of two inches or more, as may be seen by referring to the *Registrar-General's Returns* for the three first quarters of that year, giving the observations taken at the same places as those already quoted for 1854. My own observations agree entirely with these returns. In the 'Association Medical Journal,' No. cxlviii, October 18th, 1856, I published an account of the barometer for that year, when cholera was absent, in comparison with that for 1854 when cholera was present; and the contrast was as striking as it was complete and conclusive. It showed the barometer obstinately at 30 inches in the year of the cholera, and oscillating considerably above or below it when the disease was absent or declining.

As to the electricity of healthy and unhealthy years, the results are less satisfactory, because the subject, in a medical point of view, is a recent, if not a new one; and yet my observations, such as they are, supply data by no means insignificant, and which, when coupled with those of the Astronomer-Royal at Greenwich, published in the *Registrar-General's Weekly Returns*, furnish matter of no small

value and interest. Thus, during the cholera of 1853, the terrestrial and atmospheric electricity was generally considered negative; while, during the cholera of 1854, it was reported positive, but weak. In 1832 I had not thought of connecting electricity with pathology, nor am I aware of any published records on this subject of that date; but judging from the kind of sky which prevailed, the stillness of the air, and the debility that characterised disease at that time, I should, on comparing it with what I now know of the question, have no doubt in regarding it as negative, weak, or *nil*. My opinion is problematical, and open to correction by those fortunate enough to possess any authentic remains on this point, and which would be most acceptable were they recovered and brought to light. In 1854 my private observations led me to conclude that the electricity was negative, certainly weak, and frequently inert. In 1853 when the cholera was so severe at Newcastle, in the month of September, the prevailing electricity was negative.

We do not yet know the precise meaning of *positive* and *negative*, as applied to electricity. They are conventional terms used to express opposite scientific relations, but not significant of any acknowledged quality or state. Neither is it possible to designate either the one or the other with the same exactness as we describe an algebraic quantity, a mathematical axiom, or a medical fact. We rather imply conditions, the extent and nature of which are indefinite. This ambiguity is unavoidable, but not irremediable. The subject is still *sub judice;* and an approximation to the truth is preferable to no knowledge of it. To me it appears all but incontestible, that what is called negative electricity goes with diseases called asthenic, while the positive belongs to such as are sthenic or inflammatory. Negative electricity is coincident with mild and moist weather; the positive with the cold and frosty, or the hot and dry. In the summer the electricity is considerably less energetic than in the winter; but then, in the former season, its energy is restored by lightning or gales of wind. In 1857, when the temperature was high and dry, the electricity was for the same space of time (270 days) positive and generally active, with strong tension; and the negative was limited to a very small number of days. (See the Astronomer-Royal's Observations in the *Registrar-General's Weekly Returns* for 1857.) Now, that year was a singularly healthy one. More extended inquiries may show many of these notions to be erroneous or nugatory; and, on some future day, electricity itself may stand on a new and firmer basis. My mind is open to conviction, and I am ready to consider the question in all its bearings.

Be this as it may, the kind of electricity is certainly connected with the amount of daylight. There is less light on those days on which the negative electricity prevails, than on the bright, when the electricity is, with few exceptions, positive. In cholera periods, the light is diminished. I have already described this kind of atmosphere in the 'Association Medical Journal,' No. clxxxvii, August 2nd, 1856. Of the two years 1856 and 1857, the latter, though much fairer than the former, was darker by one-eighth. This diminished daylight was owing to the greater amount of clear blue sky in 1857; for blue sky gives back no reflected light. Large white-headed clouds were numerous, and there was a good deal of snow in the winter of 1856, both of which increased the reflected light greatly. But reflected light contains polarised rays, which are reasonably supposed to be less favourable to health and life than the direct solar beam; and the insalubrity of the moon's ray is thus accounted for. The year 1857, although somewhat darker than 1856, was illumined by the direct solar beam, which may help in accounting for its greater salubrity.

The returns of health are seldom favourable when the sky is grey, the air moist, the daylight diminished, and the electricity negative. The cholera atmosphere is a case in point. On the contrary, the public health is good when the season is open, the clouds distributed in masses, the moisture condensed into showers, and the electricity positive. A large amount of solar beam is as essential to the human as it is to the vegetable creation; hence the insalubrity of cities enveloped in smoke, the northern aspect of dwelling-houses, barracks, and hospitals, and the short lives of miners, clerks, and artisans, shut out from the daylight at noon.

By a small contrivance, an account of which was published in the 'Association Medical Journal,' No. cli., November 28, 1855, I have been able to measure and

record the amount of daylight for the last two years and upwards. I regret that I had not found out the means of doing so twenty-five years ago. I find that February is the darkest month in the year, and August the brightest; the last six months are brighter by one-fourth than the first six, the atmosphere seeming to have acquired a luminosity of its own, which it does not lose till the end of January. If carefully prosecuted, it is an inquiry intimately associated with health and longevity; and it would be most interesting, were it applied to town and country, high and low situations, sea and land, northern and southern latitudes.

The years following an outbreak of cholera have hitherto been marked by an increase of human life, shown by the returns of a diminished rate of mortality. This phenomenon has been prominently exhibited in the last three years succeeding to 1854. It has been variously accounted for. The epidemic was supposed to have carried off the sickly, and left only the strong; but this is contrary to the fact, for it was the mature and strong that were the most obnoxious to the disease. Others have surmised that cholera occupied the place of other diseases; and that, when it had attacked and carried off its particular victims, it left a healthy population behind. This is so far true, as that, in 1853, the rate of mortality from the ordinary causes was one-fifth below the average. Again, it has been conjectured that the better habits of hygeine adopted by the public, impressed with a dread of infection, tended to improve the general health; but can this moral and hygienic discipline be shown and vouched for? In 1855 and 1856 the natural increase of the population was ascribed to the return of the army and navy from the seats of war; but this infusion of fresh life does not serve to account for the singular absence of fatal disease throughout the rest of the population. It is evident that the phenomenon remains to be explained upon principles of which we are not yet cognisant. During the past year the number of persons who have died at a very advanced age is some proof, as far as it goes, of the old being able to survive the deleterious influences of a prevailing epidemic and a malarious atmosphere conjoined. Of more than 200 nonagenarians recorded in the *Registrar-General's Weekly Returns* for 1857, a large proportion is stated to have been living not only in unhealthy localities, but among the lower classes of society. Of 123 women, the greater number were widows. Thirty-five only were men, of whom a scanty few were designated as *gentlemen*. Seven had reached the verge of 100 and upwards. This return of extreme old age is only for one year, but it is sufficient to show that the old escape the pest as well as many of the young. How, then, shall we account for the extraordinary phenomenon of the increase of life, if not of longevity, after on outbreak of cholera? The answer to the question involves the consideration of a wide range of circumstances, pathological, social, and atmospheric; and the results of experience extended, over a large portion of the globe, and continued uninterruptedly for a great length of time, are requisite for arriving at a definite conclusion.—*British Med. Journal*, *Feb.* 27, 1858, *p.* 163.

143.—ON SOME AFFECTIONS OF VOLUNTARY MUSCLES.

Some of the Consequences of Blows and the like Injuries of Muscles—A blow on a muscle or on its nerve may be followed by complete wasting. For instance:—I have seen a case of total atrophy of the abductor indicis and adductor minimi digiti, which followed a sharp and very severe blow in front of the anterior annular ligament.

After a severe injury to a joint, the muscles acting on it may pass into a state of fixed contraction, or may start into contraction at any effort to move them, whether actively or passively. The joint thus stiffened is likely to be regarded as one that has been wrongly treated; the fracture or the dislocation, if either have occurred, may be thought to have been left unreduced, and an incurable anchylosis may be talked of. But the stiffness of the joint is due to the muscles alone; and if, by giving the patient chloroform, they be relaxed and put beyond the influence of his will, the joint becomes at once naturally movable, or nearly so. I have seen this condition at the elbow, the knee, and the hip; and I believe that I have known a similar affection of the muscles of the neck, causing temporary immobility of the head, after a blow on the vertex.

The patients are generally young persons, and the history of one may suffice; for all the cases were very similar in their results, however different in the accidents.

A boy, 10 years old, fell on his elbow and broke off the external condyle and adjacent portion of the articular end of his humerus. The arm was kept at rest on a well-padded angular splint, and union took place in the usual time, but the broken condyle remained prominent. He regained some power of movement of the elbow, but, apparently through neglect of the rules for using it which his surgeon gave him, he gradually lost this; and when I saw him, five months after the accident, the elbow was almost perfectly stiff at an angle of about 120°.

I took him into the hospital, and he was put under chloroform that the joint might be forcibly bent. But as soon as he was quite insensible the joint became easily movable through an angle of fully °90, and only just short of complete flexion and extension. As soon as he recovered from the chloroform the joint became as fixed as before in the extended position; it gradually became more stiff as he became more sensible and his muscles less relaxed.

The power of voluntary motion of the joint was gradually regained, with the help of frequent passive motion and the patient's own efforts.

The treatment here used will, I believe, usually be sufficient. Chloroform, which may first serve as a test of the state of the joint and muscles, may afterwards be used, to give opportunity for painless and free motion of the joint while the muscles are recovering. And their recovery may be accelerated by friction, warmth, passive motion to any extent that they will allow, and (which is far better) every possible effort of the patient's own will to move them.—*Med. Times and Gazette, March* 13, 1858, *p.* 261.

144.—ON THE OIL OF THE DUGONG AS A CURATIVE AGENT IN CHRONIC DISEASE.

So unpleasant is cod-liver oil, that there are very few persons who can take more than three or four tablespoonfuls in a day, which, at the most, will only yield two oz. of carbon to the system, towards 13 9-10 oz. required, leaving a fearful balance against the sick man. Fortunately, however, the theory is better than the remedy commonly used, and the sick people of Australia are singularly favoured, in having in their own territory an herbivorous cetaceous animal, the Dugong (*Halicore Australis*), inhabiting the rivers and bays of our eastern coast, from Moreton Bay to Cape York, from which an oil can be procured, possessing all the properties required for this purpose.

This animal is thus described in Knight's 'Animated Nature.'

"The dugong (*halicore* dugong: Cuvier), is a native of the Indian Seas, being common among the islands of the Indian Archipelago, and visiting also the coasts of New Holland. Its favourite haunts are the mouths of rivers and straits between proximate islands, where the depth of water is but trifling (three or four fathoms), and where, at the bottom, grows a luxuriant pasturage of submarine algæ and fuci. Here, in calm weather, may small troops be seen feeding below the surface, and every now and then rising to take breath. The position of the mouth, the muscular powers, and mobility of the lips, garnished with wiry bristles, and the short incisor tusks of the upper jaw, enable these animals to seize and drag up the long fronds of subaquatic vegetables, which constitute their nourishment.

"The dugong is in high esteem as an article of food, its flesh being tender and not unlike beef; hence it is assiduously hunted by the Malays, who attack the animal with harpoons, in the management of which they are very dexterous.

"The mutual affection of the male and female is very great, and the latter is devoted to her offspring. If a dugong be killed, the survivor of the pair, careless of danger, follows after the boat carrying the body, impelled by an overmastering passion, and thus often shares the fate of its partner; indeed, if one be taken, the other is an easy prize.

"The dugong attains to the length of seven or eight feet.

"In Moreton bay they are frequently met with nearly twice that length."

So sweet and palatable is the oil procured from the dugong that in its pure state it may be taken without disagreeing with the most sensitive stomach, and also used in a variety of ways in the process of cooking; so that this potent restorative remedy may be taken as food, and many ounces consumed almost imperceptibly every day, and thus furnish the system with the requisite amount of carbon for its daily oxidation.

This feeding upon oil may appear at first sight a novelty to many of you, but such is not the case, for its use is more widely spread than is generally thought of. The inhabitants of the arctic regions live upon it almost entirely, and enjoy tolerable health; so also do the inhabitants of Northern Russia and the regions adjoining. To come nearer home, the Guachoes in the Pampas of South America touch nothing for months together but beef, containing a very large proportion of fat; and we are told by Mr. Darwin that the inhabitants of Terra del Fuego, on the occasion of discovering the floating carcase of a putrid whale, regard it as a *feast*, and bury a considerable portion of the blubber in the sand, as a resource in time of famine. The nutritious properties of oil have for many years been known to the farmers of England, who, taking advantage of the fact, are enabled by its use to convert lean, half-starved runts into mountains of beef and tallow, literally illustrating this text of Dr. Gregory:—

"'Colligitur adeps usu multi cibi oleosi nutrientis' (fat is accumulated by the use of much oily nutritious food)."

In further support of this theory I find Dr. Prout, in his 'Bridgewater Treatise,' published nearly 25 years ago, makes this remark:—

"Two, indeed, of the chief materials from which chyle is formed, namely, the albuminous and the oleaginous principles, may be considered to be already fitted for the purposes of the animal economy, without undergoing any essential change in their composition."

And again—

"That the oleaginous principle may be converted into most, if not all the matters necessary for the existence of animal bodies, seems to be proved by the well-known fact that the life of an animal may be prolonged by the absorption of the oleaginous matter contained within its own body. Thus many hybernating animals, when they retire in autumn to sleep during the winter, are enormously fat. But while they sleep their fat is gradually removed; till they wake in the spring quite divested of it, and in a state of inanition."—(pp. 498, 499.)

From an article in 'Chambers's Journal,' written in especial advocacy of hydropathy, or the water cure, I copy the following extract in support of my argument:—

"The basis of chyle, in the normal state, is a multitude of molecules, or minute particles, each of which is found to consist of oil or fat, surrounded by a film of albumen, the substance that composes the white of egg. Chyle is, in fact, an emulsion, such as may be formed mechanically by rubbing up together a quantity of oil and albumen. The nuclei of cells are composed of an agglomeration of these oleo-albuminous particles, and it is reasonably inferred that cells can be produced only when oil and albumen are both present in the chyle, and, moreover, properly emulsionised. *The necessity of oil is indicated by the fact, that though fat of any kind may have been altogether wanting in the food, oil is always found in the chyle, being produced by the process of digestion from the starch and saccharine of the food.* Now, it seems pretty well ascertained that the chyle in tuberculous subjects is faulty in this respect. It is *deficient in the fatty element*, and contains albumen in excess, or if fat be present, it is degraded fat—the cholesterine of the chemist.

"This at once throws light on the previously known fact of the efficacy of cod-liver oil, and of fats in general, whether administered internally or externally, in cases of consumption and scrofula. It is now clear *how* they act; and thus what was once a piece of blind empiricism has become one of the few instances of really rational medical practice. Oil is a necessary ingredient in the chyle, the organism cannot in certain states make it for itself: art, therefore, supplies it ready made. It is as *food*, then, not as medicine, that it acts."—Vol. iv., p. 70.

The beneficial effect of dugong oil in chronic disorders in general may be attributed to its nourishing properties, the blood being supplied through the chyle with absolutely necessary ingredients, without that stimulation of the system which almost every article of diet will more or less produce. But in chronic disorders of the digestive organs, in the treatment of which it is peculiarly valuable, I am inclined to the opinion that, in addition to its emollient action upon the digestive mucous membrane, the unusually large proportion of glycerine this oil contains exerts its peculiar solvent powers upon the crudities and inspissated bile, locked up in the alimentary canal, which by their presence keep this highly sensitive membrane in a perpetual state of irritation. This irritation, if not relieved, soon becomes reflected in some of the numerous organs connected with it by nervous communication; thus, the windpipe—the lungs—the heart—the liver and the kidneys, become at first only sympathetically affected, and, if overlooked, ultimately the seats of fatal organic disease.—*Australian Journal.*—*Glasgow Med. Journal, April*, 1858, *p.* 128.

145.—ON THE VALUE OF ARSENIC IN CHOLERA.

By Dr. Black, Fellow of the Imperial Society of Physicians of Vienna, London.

[The author commences by stating that he believes arsenic to have a specific power in cholera; he has given it in nearly two hundred cases, in none of which has the arsenic ever failed to produce a speedy and permanent cure. It is applicable to every phasis of choleraic disease.]

Case 1.—L. G., aged forty-eight years, married, by trade a basket-maker, at six, p.m., on September 22nd, 1857, began to suffer from diarrhœa. From this hour, until ten, p.m., the bowels were moved four times, the evacuations being thin, watery, and offensive in odour. At ten the purging became much more frequent and severe, and was accompanied by almost incessant vomiting and cramps of the abdomen, legs, and even the muscles at the back of the neck. From the time above-mentioned until five, a.m., of the 23rd, the patient is reported to have vomited and purged at least forty times. Shortly after this hour I saw him. He was writhing to and fro upon a bed, which was placed opposite his house-door, in a room ten feet by twelve, with a ceiling not more than six feet high. The apartment was lighted by a small window, which, together, with another window of a foot square and the door in question, afforded the only means of ventilating the whole house. His countenance was haggard and shrunken in the extreme; eyes hollow; nose and the parts around the mouth of a deep leaden hue; skin very cold; breath cold; voice hollow, squeaking, and tubular; frequent thirst; pulse scarcely perceptible; breathing hurried and laboured. He had not passed urine since four the night before. A constant moaning was heard, except on the return of cramps, which occurred every three or four minutes, when his sufferings excited loud cries of pain. The purging and vomiting were all but incessant, the vomits and dejections being copious, thin, and evidently serous in their character. He was ordered five drops of liquor arsenicalis every fifteen minutes until the symptoms became less urgent, and then to have the same dose every hour until my next visit. Twelve, a.m.:—After the first dose of arsenic there was no return of cramps; the third dose was followed by a complete arrest of purging, whilst vomiting had occurred but three times during the interval of my first and second visits. The countenance still maintained a haggard expression; the nose in part its leaden hue; a slight degree of warmth was beginning to creep over the skin, and the pulse was now distinct at 120 per minute. Thirst was much less frequent; the breathing less hurried and laboured; but neither had the voice lost its peculiar tone, nor had the secretion of the kidneys as yet been restored. He was ordered to take the usual dose of arsenic every hour. Nine, p.m.:—The bowels were moved once at three, p.m., the evacuations being scanty, and of increased consistence. Has vomited twice, but has experienced no return whatever of cramps. Skin warm; no secretion of urine; pulse 100, larger. To take three drops of the arsenical solution every third hour.

September 24th, nine, a.m.:—Neither purging, vomiting, nor cramps since last visit. Skin hot; face flushed; thirst; pulse 96 per minute, full and strong;

passed half an ounce of urine at six this morning for the first time since the commencement of the attack. To discontinue the further use of arsenic, and to take a mixture consisting of the acetate of ammonia, potassio-tartrate of antimony, spirit of nitrous ether, and water.

25th. Quite well.

Remarks.—This case presented, in the time of its occurrence and the manifestation of its symptoms, all the characteristics of a malignant attack; yet five drops of the arsenical solution completely allayed the cramps, and fifteen the purging; whilst a few more doses placed the patient in perfect safety. Confident of the power of my remedy to control the disease, notwithstanding the extreme degree in which the case was when I first saw it, I neither ordered friction to be observed, nor the application of external heat to the body; nor did I administer or cause to be administered, a single drop of any stimulant whatever. On the contrary, the door of the house was allowed to remain open, and a cold draught of air to play upon my patient, whose only drink consisted of a moderate supply of cold water. These apparent disadvantages I purposely incurred in order to test, as far as possible, the curative power of the arsenic. How well it answered my expectations, the easy, rapid, and complete recovery of the case amply testifies.

Case 2.—H. S——, aged forty-four, married, was seized with sickness and purging at noon, September 24th, 1857. These symptoms did not become urgent until six o'clock in the evening, at which time they became more frequent, and were accompanied by occasional cramps of the abdomen. There were now, in addition to the above symptoms, coldness of the general surface, shivering, collapsed features, and thirst, but no cramps of the extremities, alteration of voice, or any leaden hue of the nose and lips. The pulse was 110 per minute, small, feeble, and stopped by the least pressure. She had not voided urine since twelve, a.m. She was ordered to take five drops of the arsenical solution every half hour.

Ten, p.m.:—Has neither vomited nor purged since taking the first dose of arsenic. Says that she felt the remedy at once affect her for the better. Has now and then slight twinging pains in the muscles of the abdomen; feels comfortable; skin becoming warm; pulse 96, larger. To take three drops of the arsenical solution every second hour.

September 25th, nine, a.m.:—Has passed a comfortable night; bowels moved once; neither nausea nor sickness; skin hot; tongue moist, but coated with a white fur; thirst; passed two ounces of urine early in the morning; pulse natural in frequency, but somewhat fuller and stronger. To discontinue the arsenic, and to take a simple diaphoretic mixture.

26th, nine, a.m.:—Neither purging nor vomiting since last visits; feels quite well.

Case 3.—H. R——, aged twenty-seven, son of the above, married, was suddenly seized, at nine, p.m., September 24th, 1857, with violent shivering, sensation of impending death, and complete inability to stand or walk. This occurring at a friend's house, he was carried home, and immediately put to bed. In a few minutes afterwards I saw him. He was then shivering violently beneath a load of blankets, was surrounded by bottles of hot water, and complained of an intolerable weight at the precordia. The symptoms of collapse were well marked, and were becoming more and more so every minute. He was ordered to take six drops of the arsenical solution every twenty minutes or half-hour. Ten, p.m.:—Immediately before taking the first dose, violent cramps of the abdomen had set in, and directly after the exhibition of that dose, a severe paroxysm of vomiting and purging had occurred. The vomit consisted of a colourless, glairy, sero-mucoid fluid, mingled with small quantities of food. The dejection was thin, watery, of a faintly bilious tinge, and of a sickly odour. A second dose of arsenic, administered immediately before the rejection of the first, arrested both the vomiting and purging. Has now occasionally twinging pains in the muscles of the abdomen and calves, but no decided cramps. The shivering and extreme coldness of skin have given place to a slight degree of warmth. Expresses himself as feeling much better; slight thirst; pulse 100, soft and regular. To continue the arsenic every second hour.

September 25th, nine, a.m.:—Found him sitting up, and down stairs. Took the arsenic until the middle of last night, and then discontinued it, as he felt well.

Nine, p.m.:—At six this evening the sickness, purging, and cramps returned. He resumed the arsenic, and was relieved by the first dose. To continue it regularly every third hour during the night.

26th, nine, a.m.:—Has passed a comfortable night; neither purging, vomiting, nor cramps since last visit; no thirst; appetite improving; skin warm; pulse natural. To take two drops of the arsenical solution every fourth hour.

27th. Discontinued the arsenic last evening. Quite well.

Remarks.—The above two cases occurred in the same house on the same day. The former was one of cholera of ordinary occurrence. The latter, in its very outset, threatened to be unusually severe. In the former, the first dose of arsenic permanently arrested both vomiting and purging; in the latter, a similar result was obtained by a second dose. The latter case exemplifies, in a remarkable manner, the specific value of arsenic—firstly, by a recurrence of the choleraic symptoms on too early a discontinuance of the remedy; and, secondly, by the *immediate* control of those symptoms on the resumption of the arsenic.—*Lancet*, *Nov.* 28, 1857, *p.* 541.

146.—*Excipient for Pills.*—Mr. Stanislas Martin suggests, as preferable to honey, which has been recently recommended as an excipient for pills, the employment of treacle, which is far easier of manipulation, a much less quantity being required. Pills so prepared last soft and flexible for years.—*Bull. Thérap.*—*Med. Times and Gazette*, *Nov.* 14, 1857, *p.* 511.

147.—*Syrup of Protocarbonate of Iron.*—The facility with which protocarbonate of iron dissolves in organic acids, and its perfect harmlessness in irritable subjects, render it one of the most valuable agents in therapeutics; accordingly, all the new preparations into which sugar has been introduced, for the purpose of giving stability to this saline compound, have been adopted in practice.

M. Dannecy, a distinguished pharmacien in Bourdeaux, having ascertained that the precipitate of protocarbonate of iron, obtained by mixing sweetened and boiled solutions of carbonate of soda and of protosulphate of iron, possesses the singular property of dissolving in simple syrup without becoming coloured, conceived the idea of thus preparing a new ferruginous syrup.

This preparation, being permanent, will be employed in cases in which the form of syrup is preferable to that of pills; for example, in the treatment of children.

The following is the process for making M. Dannecy's new preparation:—Take of purified protosulphate of iron, two ounces; distilled water, sixteen ounces; white sugar, two ounces: dissolve with ebullition, and filter. Secondly, take of crystallized carbonate of soda two and a half ounces; distilled water, sixteen ounces; white sugar, two ounces; dissolve with ebullition, and filter. When the two solutions have cooled, mix them in a glass vessel, and shake for a moment; a precipitate is formed, which is at first white, but soon becomes of a greenish-grey colour, preserving this shade. Allow this precipitate to collect during twenty-four hours; decant. Afterwards take a solution of sugar, in the following proportions:—white sugar, two and a half ounces; distilled water, ten ounces; dissolve with ebullition and filter. Add the precipitate to this saccharine fluid when cold; set it aside to rest; decant. Repeat this process once more, in order to remove the sulphate of soda resulting from the double decomposition. This washing ought to be accomplished as quickly as possible, to prevent the unnecessary solution of the ferruginous precipitate. Subsequently, agitate this precipitate, from time to time, in a fresh portion of saccharine solution (water, ten ounces; sugar, two and a half ounces). It will dissolve in the course of some days. Lastly, take of white sugar thirty-eight and a half ounces; distilled water, nineteen ounces; add the saccharine ferruginous solution, and boil to specific gravity 1·262, at the temperature of ebullition; flavour with tincture of lemon or orange. The product will be sixty-four ounces of almost colourless and perfectly clear

syrup of protocarbonate of iron, containing 9·90 per cent. of oxide of iron.—*Bulletin Général de Thérapeutique.*

[It is evident that if the syrup above described really possesses the stability and composition assigned to it, it must prove it a most valuable preparation.]

148.—*Glycerine a proposed Substitute for Oils and Fats in Ointments.*—Mr. G. F. Schacht proposes to substitute for oils and fats in ointments a "plasma," prepared by mixing one fluid ounce of glycerine with seventy grains of starch powder, and heating the mixture gradually to about 240° F., constantly stirring. There appear, however, to be numerous objections to the proposed substitution, among the principal of which are, the difficulty of procuring a sufficient supply of *pure* glycerine, the liability of the "plasma" to absorb moisture, and lose its original consistence, and the questionable effects of starch upon the skin in certain cases.—*Pharmaceutical Journal.*

149.—*Iodide of Lime.*—This preparation, made with one part of iodine and seven of lime, is recommended by Dr. Pidduck as superior to the iodide of potassium—in the comparative smallness of its dose; in its ready combination with the blood and tissues, manifested by its alterative effects; in not passing so quickly through the kidneys; in not producing gastro-enteric and vesical irritation: and in being nearly tasteless. Dr. Pidduck uses a solution of one drachm (containing eight and a half grains of iodine) in a pint of boiling water, which, when cold and filtered, is colourless and transparent. The iodine is found to exist in the solution in the form of iodide of calcium and iodate of lime.—*Ibid.*

150.—*New preparation of Bark—Quinium—(the alcoholic Extract with Lime of M. A. Labarraque, of Havre.)*—The objects of the investigations of M.M. Delondre and A. Labarraque, which have led to the adoption of the above preparation, were—

1. To find a preparation admitting of the use of all the cinchonas which contain, at the same time, quina and cinchonia in considerable proportion, and these are the most numerous. M. Soubeiran, in his course of pharmacology, observes that the association of cinchonia with quina presents, in many cases, important advantages, and that the two febrifuge bases are complementary to one another in a therapeutic point of view.

2. To obtain uniformity in the product by an easy and strict proportionment of the febrifuge alkaloids, thus practically applying, in the most useful manner, the discovery of Pelletier and Caventou.

3. To preserve all the useful products of the cinchonas by removing only the inert matters which interfere with the easy absorption of the active principles, and oppress the digestive organs.

4. To establish a proportion of quina and cinchonia, similar to that found in the cinchona, which the experience of all ages has shown to be the most efficacious, the bright red cinchona, which is at present scarcely employed, on account of its very high price.

5. To simplify operations, so that nothing may be lost, and so as to afford the best febrifuge at the lowest possible price.

The question of price is, in fact, very important in dealing with a dear medicine, the use of which ought to be continued, and which is most frequently necessary for the poorest country labourers.

The following is M. Labarraque's formula, as it has been adopted by the Academie de Médecine, and entered in their Bulletin.

Formula for the alcoholic extract of cinchona by means of lime.—Take cinchona barks of known composition; mix them in such quantities that the quina may be present, relatively to the cinchonia, in the proportion of two parts of the former to one of the latter.

Pound the barks; mix the powder with half its weight of slaked lime; heat the mixed powder with boiling alcohol until the barks are exhausted; collect the greater part of the alcohol by distillation; complete the evaporation. The residue is the alcoholic extract of cinchona by means of lime.

Seventy grains of this extract ought to yield, by the ordinary processes, fifteen and a half grains of sulphate of quina, and nearly eight grains of sulphate of cinchonia.

Pills of Quinium.—Two and a half grains of quinium in a pill represent one-third of their weight of febrifuge alkaloid. Thirty of these pills, which are sold for about fifteen pence, suffice in the majority of cases for the cure of an intermittent fever; from five to ten are given in the twenty hours, as far as possible from the approaching paroxysm. Half a glass of wine is taken after each dose.

Wine of Quinium.—This wine, which may be of great use as a tonic, as a febrifuge, and in preventing the return of obstinate intermittent fevers, is prepared by M. A. Labarraque by dissolving seventy grains of quinium in twelve times its weight of alcohol, adding thirty-five ounces of good white wine, and filtering. The wine contains about twenty-three grains of the alkaloid in thirty-two ounces; the dose is from an ounce and a half to three ounces as a tonic, and from three to six ounces as a febrifuge.

The following are M. Bouchardat's observations in his 'Traité de Thérapeutique et de Matière Médicale,' on the comparative advantages of the sulphate of quina and quinium:—

"Whenever it is necessary to cut short a paroxysm surely and quickly, sulphate of quina will always have the superiority over all the other preparations of cinchona; none of them, not quinium itself, can be compared to it for this marvellous power. For this reason no substitute is to be found for it when we have to deal with essential paroxysms. But when it is our object to cure a fever of long standing, surely and without shocks to the system, quinium resumes its supremacy.

"In treating intermittent fevers in an hospital or in a healthy locality, remote from the foci in which these fevers have originated, the expectant system alone (as M. Chomel had so well established for the hospitals in Paris, and as M. Lavern has verified in those of Blidah) suffices in the great majority of cases: sulphate of quina is, under these circumstances, the most valuable adjuvant; it still shows in these special instances its incontestible superiority, in quickly and effectually relieving the patients from the intermittent fevers which tormented them.

"But it is when the patients remain in the localities, and under the conditions in which they have been attacked by the fever, that the remedy which subdues the disease without disturbing the system, in its turn resumes its superiority.

"It is in fever countries, in the midst of the causes which have given birth to the fevers, when these same causes persist, that all the advantages of quinium appear. Under such circumstances, M. Vahu has administered it in Algiers, H. Hudellet in Dombes, and I myself in several fever localities in the department of l'Yonne."

To this first testimony borne by M. Bouchardat, we hope soon to add further information on the subject. Quinium is being largely tried in the cliniques of M. Trousseau, at the Hotel Dieu, and of M. Aran, at the Hôpital Saint Antoine, and these experiments will furnish the opportunity of returning to this important question.—*Bulletin Général de Thérapeutique, and Dublin Quarterly Journal.*

151.—*Formula for the preparation of Anti-asthmatic Cigarettes*, by M. Dannecy, pharmacien, of Bourdeaux.—Some of the properties of stramonium and belladonna—which plants, when smoked, justly enjoy the reputation of relieving asthma, and which are employed with the most undoubted success in the treatment of neuralgia—exist also in plants abounding in nitrates. Thus I have seen patients who had experienced great relief from the use of the leaves of borage and pellitory—plants containing, as is well known, much nitrate of lime.

The fault which almost all patients find with narcotic plants, smoked in pipes or in the form of cigarettes, is a copious production of smoke, which fatigues them,

and sometimes excites cough— a symptom they are, on the contrary, employed to allay.

In order to obviate this inconvenience, I have added nitre to the leaves of belladonna and of stramonium, by watering these plants, dried and conveniently spread out, with a solution of nitrate of potash, in the proportion of three ounces of the salt to rather more than two pounds avoirdupois of the plants. It will be easily understood, that as this solution penetrates the entire vegetable tissue, the latter will, when dry, burn completely, without the formation of the pyrogeneous products above alluded to.

I have for many years prepared cigarettes according to this formula, and the benefit derived from their use by a great number of patients induces me to publish it, and to call the attention of practitioners to this mode of treatment, consisting in the smoking of narcotic plants combined with nitre.—*Dublin Hospital Gazette, March* 1, 1858, *p.* 75.

152.—*New Caustic Pencil, modifying the Tissues in different Degrees.—Double Salt of Nitrate of Silver and of Soda.*—M. Brun, in the 'Gazette Médicale de Lyon,' proposes the use of the above double salt, in varying proportions, in order to obtain the modifying, in contradistinction to the caustic or destructive, effects of nitrate of silver upon the tissues, in cases in which it is necessary to confine this action to a circumscribed point—as, for example, in chronic inflammation of the urethra, where the disease is localized—as in irritations of the prostatic region, in spermatorrhœa, neuralgia of the neck of the bladder, &c.—in which injections would irritate the surrounding sound parts, and consequently dispose to an extension of the evil. For this purpose he has had pencils prepared of nitrate of soda and nitrate of silver, in varying proportions.

The following is the process adopted by M. Livernay, pharmacien, in the manufacture of the pencils.—Dissolve, on the one hand, a portion of nitrate of silver in a sufficient quantity of distilled water; on the other, a portion of nitrate of soda in a like quantity of water; mix these two solutions, and evaporate them to dryness. Place the residue in a capsule, and heat until it be fused; then pour the product into the mould, previously warmed and greased. When cold, a cylinder is obtained, representing a double salt of nitrate of silver and of soda.

This double salt is of a pearly-grey colour, if each of the salts employed was pure; it acquires a brown and blackish tint, if the fusion was too long continued, whether in consequence of the reduction of a small quantity of silver, or of the action of the fatty matter with which the mould was smeared.

The nitrate of silver and soda presents a crystalline and radiated fracture. It is very soluble in water and in boiling water. It is not more brittle than nitrate of silver, and it is more easily cast. Generally speaking, it presents the same characters.

These two salts may be combined in the most varied proportions.

M. Brun has used this double salt, with much advantage, for touching aphthæ of the mouth, for smearing the glans, in cases of balanitis, and for applying to a localised inflammation of the lower eyelid. He sums up its advantages in the following propositions:—

1. It better fulfils the object of the practitioner, where only a modification of the tissues is desired.
2. Its action may be increased or diminished, by varying the relative proportion of the two component salts.
3. It is more easily manipulated.
4. In no case is its use attended with danger.—*Bull. Général de Thérap.—Dublin Hospital Gazette, March* 1, 1858, *p.* 75.

153.—SELECTIONS FROM FAVOURITE PRESCRIPTIONS OF LIVING AMERICAN PRACTITIONERS.

By Dr. Horace Green.

Narcotics and Sedatives.—As palliatives in the treatment of all forms of neu-

ralgia, the narcotics and sedatives are very generally resorted to by practitioners, especially during the paroxysms of the disease. When appropriately combined, their efficacy in these affections is more prompt and decided than when separately administered.

℞. Extracti hyoscyami, ℥ss.; morphiæ sulphatis, gra. iij.; strychniæ, gra. ij.; capsici pulv, ℥ss.; zinci sulphatis, gra. xv. M. Fiat massa; in pilulæ xxx. dividenda capiat unam ter quaterve in die.

In neuralgia, unattended by organic lesions, the above pills, exhibited every sixth or fourth hour, according to circumstances, will be found to be an excellent remedy. They have proved especially serviceable in the form of neuralgia in which the divisions of the fifth pair of nerves are so frequently involved. Not only in facial neuralgia, but in all cases where the disease has been caused by malaria, this combination may be administered, with confidence that the result will be favourable. The valerianate of iron, conjoined with the extract of hyoscyamus, is an excellent anti-spasmodic and tonic, and may be employed with great advantage for the treatment of chorea, and all the neuralgic affections of anæmic and debilitated females:

℞. Extracti hyoscyami, ℥ss.; ferri valerianatis, ℥i. Fiat massa, et in pilulas triginti dividendas; quaram date unam ter in die.

The valerianate of iron and the valerianate of zinc are two highly valuable remedies; and, were the therapeutic powers of these medicines better understood by the profession, they would be much more extensively employed than they now are for the treatment of disease. The valerianate of zinc, Dr. Neligan says, is "one of the most valuable modern additions to the Materia Medica."

℞. Extracti hyoscyami, ℈iss.; zinci valerianatis, ℈j.; Fiant pilulæ xxx. Capiat unam bis terve in die.

The above pill is a valuable remedy in the treatment of facial neuralgia; and, indeed, is equally serviceable in all the nervous and neuralgic affections for which the valerianate of iron has been advised.

℞. Extracti belladonnæ, gra. viij.; camphori pulv., ℥j.; quiniæ disulphatis, ℈ij. Misce; Fiant pilulæ triginti.

These pills are very effective in the treatment of dysmenorrhœa. One pill may be exhibited every hour or two hours till the pain ceases. In females of a nervous temperament, when painful menstruation occurs, independent of organic lesions, these pills administered as above directed, seldom fail of affording relief. In those cases of dysmenorrhœa where a tonic is not particularly indicated, the following are more appropriate, and are equally efficacious:—

℞. Extracti belladonnæ, gra. viij.; ipecacuanhæ pulv. gra. x.; zinci sulphatis, ℥ss. Misce; Fiant pilulæ xxx., quarum capiat unam quâque horâ, donec leniatur dolor.

The following pills are highly recommended by an intelligent and experienced practitioner in the treatment of leucorrhœa occurring in anæmic and nervous females:—

℞. Extracti hyoscyami, ℥i.; argenti nitratis, gra. x.; cantharidis pulv., gra. xii.; quiniæ disulphatis, ℈ij. Fiant pilulæ xl. Sumat unam mane et nocte.

The same physician advises the subjoined formula as a combination that may be employed with great advantage as a diuretic and alterative in the treatment of cellular dropsy:—

℞. Extracti conii. ℥j.; cantharidis pulv., ℈ij.; hydrarg. submur, ℥ss.; ipecacuanhæ pulv., ℈j. Misce; Fiat massa; in pilulæ xl. dividenda. Cujus capiat unam ter quarterve in die.

A combination of the extract of belladonna with quinine has been employed very efficaciously in the treatment of gastralgia.

℞. Extracti belladonnæ, ℈ss.; quiniæ disulphatis, ℥j. M. Fiant pilulæ xxx. Sumat unam ter in die.

In that variety of gastralgia which is not unfrequently occurring in the course of chronic gastritis, we have derived the greatest benefit from the employment of the following pills:—

℞. Extracti hyoscyami, ℥j.; argenti nitratis, gra. x.; bismuthi subnitratis, ℥iss. Fiant pilulæ xl.; quarum sumatur una mane ac nocte.

The nitrate of silver, combined with some one of the sedative extracts, may be employed advantageously in the treatment of almost all chronic gastric affections. In cases of obstinate chronic gastritis, or long-continued dyspepsia, we have found the following pills more efficacious than any other single remedy. They should be continued for several weeks:—

℞. Extracti conii, *vel* lupuli, ʒj.; argenti nitratis, gr. x.; capsici pulv., quiniæ disulphatis, aa. ℈ij. Misce; Fiat massa, in pilulas xl., dividenda. Capiat unam bis terve in die.

There is a troublesome and often an obstinate form of gastric irritability, denominated by the French *estomac glaireuse*, in which the patient occasionally ejects by eructation, a tasteless watery fluid, and which is accompanied often by a severe burning pain in the epigastric region. This variety of the disease is arrested with great certainty by the exhibition of either the preceding or the following pills:—

℞. Extracti lupulinæ, ʒj.; argenti nitratis, gr. x.; bismuthi subnitratis, ℈iss.; quiniæ disulphatis ℈ij. Fiant pilulæ xl.; cujus sumatur unam bis terve in die.

In all forms of chronic disease attended with acute pain, as well as in all painful nervous affections, in the treatment of which, for any cause, full doses of opium are contra-indicated, the following combination may be administered with great advantage:—

℞. Extracti hyoscyami, gr. xv.; extracti stramonii, gr. iv.; extracti humuli, ʒj.; morphiæ sulphatis, gr. iss. Misce. Divide in pilulas xxx.; quarum capiat unam omni semi-horâ, donec leniatur dolor.

Of the therapeutic effects of muriate of ammonia, when internally administered, but little is known, as in this manner it is but rarely employed in this country. With the German physicians it has obtained a high reputation as a good alterative, and a promoter of healthy secretions in chronic diseases of the mucous and serous tissues. It not only promotes the mucous secretions, says Dr. Sunderlin, but the cutaneous exhalations, and improves also nutrition and assimilation. Combined with a sedative and narcotic, we have found it highly valuable in allaying irritation, and in promoting expectoration, in the early stage of phthisis:—

℞. Ammoniæ muriatis, ʒss.; opii pulv., gr. x.; digitalis pulv., scillæ pulv., aa. ℈j. Misce. Divide in pilulas triginti. Sumat unam quaque sexta horâ.

Sleeplessness, occurring in hypochondria, hysteria, and, indeed, in all nervous affections, may be overcome with great certainty by the administration of the following pills:—

℞. Assafœtidæ, ʒj.; morphiæ sulphatis, gr. iij. M. Fiant pilulæ triginti, quarum exhibe unam vel duæ horâ decubitus.

The above pills—two to four exhibited daily—are very efficacious in arresting the dry cough which is occasionally consequent on disordered menstruation in nervous females.—*American Medical Monthly.—Edinburgh Med. Journal, Dec.* 1857, *p.* 535.

154.—OBSERVATIONS ON THE POISON OF THE UPAS ANTIAR.

By Professor Albert Kölliker.

[This energetic poison has not been examined since the beginning of the present century. It is obtained from Borneo and Java.]

The following are the principal results which I obtained in my experiments with frogs, and I hope that they will not be deemed unworthy of notice by those who take an interest in the physiological action of poisons in general:—

The antiar, like most other poisons, acts from the intestinal canal, and from wounds; but it must be remarked, that it is much more energetic and rapid when introduced into a wound. The symptoms which are observed in frogs, in the latter case, are the following:—First of all the *voluntary movements* become less energetic, and at length cease totally, 30 to 40 minutes after the introduction of the poison (after 21m. min. and 1h. 21m. max.). Then follows a time in which the reflex movements may be caused by stimulating the skin; but this faculty also

is lost very soon, viz., at from 50 to 60 minutes (at 33m. min. and 85m. max.); and the animals die without the slightest trace of convulsions or tetanic spasm. If now the frogs are opened, we find that, without any exception, *the heart has ceased to beat.* The auricles are dilated, the ventricle corrugated, rather small, and generally red, as if blood had been extravasated into its muscular parietes; but very soon the exposure of the heart to the air causes the ventricle to shrink a little more, and to become pale and stiff, as if in the state of *rigor mortis.* All interior organs, especially the lungs, liver, stomach, intestine, and kidneys, are gorged with blood, and in a state of great, especially venous, hyperæmia. The blood is fluid and rather dark, but soon coagulates when exposed to the air, and assumes a brighter colour. The lymphatic hearts cease to beat as soon as the reflex movements are lost. At the same time the nerves are yet found excitable, but their power is very low, and generally vanishes in the second hour after the application of the poison. The same must be said of the muscles, which contract very feebly when directly stimulated by galvanism, and in most cases lose their power totally in the second or third hour, and generally a little after their nerves. The *rigor mortis* begins early, sometimes in the sixth hour, and is generally well established at the eighteenth hour.

Amongst all these symptoms, to which we may add some signs of vomiting occurring now and then, there was none which attracted my attention more than the cessation of the movements of the heart, considering the great energy which this organ possesses in frogs; and I tried, therefore, before all, to elucidate the action of the antiar upon the heart. For this purpose I instituted a new series of experiments, in which I exposed the heart by the section of the sternum, before the poison was introduced into a wound of the back; and in this way I easily got the result, that the heart ceases to beat as soon *as from the fifth to the tenth minute* after the introduction of the antiar; and so, that first the ventricle stops, and half a minute or one minute later, also the auricles. Now, as the frogs at this time are not at all deprived of their faculty to move, we may have the rather astonishing view of an animal, with artificially paralysed heart, which moves and leaps as freely as if nothing had happened.

The experiments just mentioned prove, *that the first action* of the upas antiar *is to paralyse the heart;* and I am therefore quite in accordance with Sir Benjamin Brodie, who, by his experiments on mammalia, came to the same result in 1812; whilst I cannot otherwise than disagree with Schnell ('Diss. de Upas Antiar,' Tubingæ, 1815), who assumes that this poison acts in the first place on the spinal marrow. Now this point fixed, the further question arises, whether the other symptoms mentioned, viz., the paralysis of the voluntary and reflex movements, and the loss of the irritability of the muscles and nerves, are only the results of the paralysis of the heart, or must be attributed to a specification of the antiar. For the elucidation of this question, I found it necessary to study the consequences of the suppression of the heart's action on the organism of frogs, which I did in the same way as it had been done by others, especially by Kunde (Müller's Archiv., 1847,) viz., by cutting out the heart, or by putting a ligature around the base of it, so as to stop the circulation totally. The results of these experiments were in both cases the same, that is to say, the voluntary movements ceased in from 30 to 60 minutes, and the reflex movements after one or two hours. Hence it follows that these two symptoms of the poisoning with antiar are simply dependent on the paralysis of the heart caused by it. With reference to the irritability of the muscles and nerves, on the contrary, it is easy to show that the ligature or excision of the heart has not the same influence as the antiar, inasmuch as in the first case the muscles and nerves are found irritable six or seven hours, and more, after the experiment has been made. Therefore it may be said that the antiar has a direct action on these organs.

These points once demonstrated, there remained one more question to elucidate, namely, whether the antiar acts only upon the muscles, or also upon the nerves. If we consider that the antiar undoubtedly paralyses the muscles, we may easily see that the loss of the excitability of the nerves possibly depends merely upon the impairment of the muscular contractility, and is therefore not real, but only apparent. With a view to determine the real state of things, I tried a third series of experiments—poisoning frogs in such a manner that the muscles of one limb were

kept free from the influence of the poison. This was done in two ways:—First, by putting a ligature round the crural artery and vein of one leg; and secondly, by cutting through a leg entirely, after the ligature of its vessels, with the exception only of the ischiatic nerve. In poisoning frogs treated in one of these ways, through a wound of the back, I found that, with the exception of the heart, the antiar acts in the first instance upon the muscles. This is shown by the fact, that in the second hour, at the time when the muscles of the poisoned parts have lost their irritability, the nerves of the sacral plexus in the abdomen still possess their full influence upon the muscles of the leg which has been kept free from the action of the poison. One might be inclined from this to conclude, that the nerves are not at all acted upon by the antiar; but this inference would be erroneous. In fact, the experiments just mentioned, if followed a little longer, show that in the third or fourth hour the sacral plexus also becomes inactive, at a time when the muscles of the non-poisoned leg are fully contractile. The antiar, therefore, paralyses also the nervous trunks, but later than the muscles.

From all these experiments, it seems to follow that the antiar is a poison which acts principally upon the muscular system (the heart and the voluntary muscles), a conclusion, in favour of which I may further add, that the muscles and heart of frogs poisoned by urari (woorara curare) lose their irritability totally, and in a short time, if antiar is introduced into a wound some time after the urari. If we consider that, as I have shown, (see 'Proceedings of the Royal Society,' 1856, p. 201) the urari only acts upon the terminations of the nerves in the muscles, and does not affect the irritability of the heart and muscles at all, we may conclude, that a poison, which, as the antiar, is capable of paralysing the muscles after the urari, has really a direct action upon the muscular fibre.

The results of my investigation into the effects of the antiar upon frogs, are, therefore, the following:—

1. That antiar is a paralysing poison.
2. It acts in the first instance and with great rapidity (in 5 to 10 minutes) upon the heart, and stops its action.
3. The consequences of this paralysis of the heart are the cessation of the voluntary and reflex movements in the first and second hour after the introduction of the poison.
4. The antiar paralyses in the second place the voluntary muscles.
4. In the third place it causes the loss of excitability of the great nervous trunks.
6. The heart and muscles of frogs poisoned with urari may be paralysed by antiar.
7. From all this it may be deduced, that the antiar principally acts upon the muscular fibre and causes paralysis of it.

So much for this time. My experiments with the antiar upon warm-blooded animals have only begun, and I am not yet able to draw any conclusion from them. As soon as this will be possible I shall take the liberty to submit them to the Royal Society, together with the results of my experiments with the *upas teinté*, which poison I had also the good fortune to obtain through the kindness of Sir Benjamin Brodie and Dr. Horsfield. With regard to the antiar, I may further add, that experiments made independently, and at the same time, by my friend Dr. Sharpey with this poison, have conducted to the same results as my own.—*Proceedings of the Royal Society.—Dublin Hospital Gazette, March* 15, 1858, *p.* 91.

155.—*Chloroform in Poisoning by Strychnia.*—A lad, aged 15, swallowed by mistake a powder containing about two grains of strychnia. Dr. Jewett saw him thirty or forty minutes afterwards, and found him with a livid countenance, protruding and injected eyes, a full, strong, and irregular pulse, and his skin bathed in perspiration. Violent tetanic spasms, like the effect of shocks from an electrical battery, occurred in rapid succession. If they relaxed for a moment, the slightest touch of the surface, or presenting anything to the mouth, brought them on again with redoubled violence. Chloroform, inhaled with difficulty at first,

subdued the spasms in ten minutes, these returning whenever it was suspended. Partial anæsthesia was kept up for about four and a half hours, when it was finally discontinued. The recovery of the boy was rapid.—*Boston Journal.—Med. Times and Gazette, Jan.* 2, 1858, *p.* 19.

156.—*The Acid Sulphate of Zinc Paste.*—Amongst the new forms of caustic which the recent discussion respecting them has been the means of bringing into use, one of the most convenient appears to be the sulphate of zinc with sulphuric acid. The powdered salt is moistened with the concentrated acid, and applied in a paste form to the sore. It has been proposed, and successfully employed in one or two cases, by Mr. Henry Thompson. A great recommendation is, that its ingredients are always at hand, and easily manipulated. Its efficiency also appears to be great, and the resulting cicatrix soft and good.—*Med. Times and Gazette, Jan.* 2, 1858, *p.* 11.

157.—ON THE INFLUENCE WHICH LIQUOR POTASSÆ AND OTHER CAUSTIC ALKALIES EXERT ON PREPARATIONS OF HENBANE, STRAMONIUM, AND BELLADONNA.

By Dr. A. B. Garrod, Physician to University College Hospital.

[This paper was read before the Royal Medical and Chirurgical Society.]

The author first alluded to the frequent exhibition of henbane with liquor potassæ, and brought forward many proofs that such combinations were often administered. He also stated that the like mixtures were recommended by both medical and surgical authors. Dr. Garrod then proceeded to detail experiments, which demonstrated beyond doubt that the active principle of henbane was destroyed by liquor potassæ, and other caustic alkalies; and that such a combination was inert, both when topically applied (as evidenced by the absence of power in causing dilatation of the pupil of the eye), and also when internally administered. Similar observations were next detailed upon the preparations of stramonium and belladonna, and the results were found to be the same. It was, however, shown that the carbonates and bicarbonates of the alkalies were devoid of the property of destroying the activity of the plants. In some of Dr. Garrod's experiments as much as a drachm of the extract of henbane and an ounce and a half of the tincture were administered in combination with potash, without the production of the slightest symptom.

The results arrived at in the communication may be thus summed up:—

1st. Caustic alkalies, such as exist in liquor potassæ or liquor sodæ, entirely destroy the activity of henbane, preventing its action on the pupil when topically applied, and its influence upon the system when internally administered; and, combined with a proper amount of these alkalies, the largest doses of the preparations of henbane may be given without the production of any symptoms.

2ndly. The same influence is exerted by the fixed caustic alkalies upon belladonna and stramonium.

3rdly. The carbonates and bicarbonates of potash and soda produce no injurious effects upon the preparations of any of the three above named plants.

The deductions naturally to be drawn from these results are:—

a. That neither liquor potassæ nor any caustic fixed alkali should be prescribed with tincture or extract of henbane, as the virtues of the latter drug are thereby completely neutralized.

b. That when it is desirable to administer an alkaline remedy with henbane, either a carbonate or bicarbonate should be selected, which would probably be equally efficacious upon the stomach, if such influence be required, and certainly as efficient in altering the condition of the urine, and the mucous membrane of the urinary passages.

c. That the same precautions should be observed with regard to belladonna and stramonium, if at any time prescribed in conjunction with alkalies.

[The question being started by Sir Chas. Locock as to whether the caustic alkalies could be employed as antidotes to the poisons of henbane, belladonna, and stramonium, the following remarks were elicited:—]

Dr. Garrod thought the caustic alkalies never could be employed as antidotes in these cases, as the quantity given must be so large, or the strength so great, as to make it dangerous. There was, however, a certain antidote for henbane, belladonna, or stramonium. This was animal charcoal. If we took a solution of any of these poisons, and added but a small amount of animal charcoal, the effect on the system was instantly destroyed, or rather neutralized. It required less to neutralize stramonium than belladonna, and less for henbane than stramonium. He narrated two cases in which, by accident, twelve grains and a quarter of an ounce respectively of the dried leaves of belladonna were swallowed. In both these cases animal charcoal was administered, and, though somewhat late, both recovered. He need not say that it was necessary that the antidote should be given before the poison had been absorbed into the system; if it had passed from the stomach, of course no antidote would be effective. In illustration of his statements, he related the following experiments, which he had repeated on several occasions. He gave a dog a certain dose of aconite, which destroyed him. He gave another dog forty times the quantity of the same poison, combined with a small quantity of animal charcoal. This animal was unaffected. In these experiments it was not necessary to have purified animal charcoal, as the common bone-black would answer all purposes.

In answer to questions from Drs. E. Smith and Barclay, Dr. Garrod said he was quite ignorant of the mode of action of animal charcoal upon vegetable poisons, nor could he explain why vegetable charcoal did not answer equally well. But such was the fact. It could be proved in this way: Take a certain quantity of vegetable charcoal, and add to it a solution of henbane, stramonium, or belladonna; it did not in any way influence the solution, and when it was applied to the eye, it would still dilate the pupil. If animal charcoal, however, were substituted for the vegetable charcoal, the solution would fail to dilate the pupil. Animal charcoal, it was known, had an intense absorbing power compared with vegetable charcoal. That animal charcoal did possess the property in question might be determined easily. If to a solution of quinine or morphia animal charcoal were added, it neutralized it; vegetable charcoal did not act upon it.

Dr. Marcet referred to the experiments of Dr. Hofmann, for the detection of strychnia in beer: these experiments had shown that the strychnia was taken up by the animal charcoal, which rendered it insoluble, and prevented its absorption when steeped in animal matter. This circumstance tended to prove that animal charcoal destroyed the poisonous effects of the vegetable alkaloids.—*Lancet, Dec.* 5, 1857, *p.* 577.

158.—*Sugared Sulphate of the Protoxide of Iron.*—It is very difficult to prevent superoxygenization of sulphate of iron, while, for various chemical and pharmaceutical purposes, it is of importance to have a pure sulphate of the protoxide. M. E. Latour, a chemist in the Algerian army, states that sugar will preserve this, unaltered; while the salt so prepared is of a constant composition, and crystallizes regularly. Dissolve, on the one hand, 200 parts of the sulphate in 100 of boiling distilled water, and on the other 50 of sugar-candy in 30 of boiling distilled water. The two solutions are then to be mixed, rapidly filtered, and crystallized at a temperature of from 95° to 105°. The crystals are to be dried on paper, and closed up in a very dry bottle. By concentration additional water is driven off, and the crystals are found to consist of sulphate of the protoxide 54·57, water 32·50, sugar 12·93.—*Gaz. des Hôp.*—*Med. Times and Gazette, Nov.* 21, 1857, *p.* 534.

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159. *New Remedy in Hemicrania.*—Dr. Jung stated at the Berlin Society of Medicine, that in the neuralgic pains known by the term migraine, or hemicrania, and especially when the infraorbital nerve is affected, he has found the aspiration of the following mixture an almost infallible remedy. Dissolve four grains of ace-

tate of morphia in a few drops of acetic acid, and add ʒ 1½ of laurel water, and ten drops of prussic acid. Of this mixture ten drops (or in very excitable persons five) are to be mixed with an equal quantity of water, and strongly aspired by the nostril corresponding to the side of the pain, keeping the other closed. The relief is immediate; but the existence of a coryza is a contra-indication to the employment of the remedy.—*Bull. de Thérap.—Med. Times and Gazette, Nov.* 7, 1857, *p.* 482.

160. ON COUP DE SOLEIL, ITS CAUSES AND TREATMENT.

By Dr. G. S. Bratson, Staff Surgeon, First Class (Half Pay).

[Apoplexy and coup de soleil are not identical, or even including the same conditions of body, and consequently quite different treatment is required. True, there are symptoms of congestion of the head, or rather stagnation of the capillary circulation; but these are the effects of nervous depression from exhaustion. Dr. Gordon of H. M. 10th Regt., says, that such is the rate of mortality in these affections, that out of 28 cases only 1 recovered. The author's experience does not agree with this: he mentions one particular instance—]

Before daylight, on the 12th of April, 1852, the force destined for the capture of Rangoon, landed from the fleet in the river, the stockades along the banks having been destroyed during the naval action the previous day. The force consisted, as regarded Europeans, of about 850 men of H. M. 18th R. I., 900 men of H. M. 51st K. O. L. I., 460 men (a wing) of H. M. 80th, and about 500 European artillerymen. This force remained for three days and two nights located on a dry open rice flat—we had no tents—exposed to, and utterly unprotected from, the blazing sun by day and the heavy dews by night. As may be imagined, the result of considerable fatigue under such exposure was the occurrence of a number of cases of coup de soleil.

My remarks will be, in a great degree, confined to the 51st regiment, of which I was then the surgeon, and in which, on the first day, after the men had been subjected to great exertions in the attack and capture of the White House picket, an important outpost of Rangoon, we had probably not less than from eight to ten cases. In nearly all there were the same symptoms—to wit, unconsciousness, laboured respiration, and extreme prostration. In one—that of the serjeant-major of the regiment—as the insensibility was accompanied by stertorous breathing, with great congestion and suffusion of face and eyes—the medical officer who first saw him took a few ounces of blood from his arm; in this case I would have done the same—more, however, I believe to satisfy a near relative, than from much hope of a beneficial result, for this was clearly a case of the more ordinary apoplectic character, in which large and rapid effusion produced an almost immediately fatal result. In the remaining cases, including two officers—one the lieutenant-colonel commanding—the lancet was not used, and all recovered. The treatment was to unfasten, as quickly as possible, the man's dress and accoutrements—the men had no stocks on; expose the neck and chest, get him, if possible, under the shade of a bush, raise his head a little, and commence the affusion of cold water from a bheestie's (water-carrier) sheep-skin bag, continuing the affusion at intervals over head, chest, and epigastrium, until consciousness and the power of swallowing returned. When this takes place the affusion may be stopped, and a mild stimulant mixture given occasionally in small dozes.

I will now mention two fatal cases which occurred that day, and which struck me very forcibly. Both were field officers of the Madras army.

One, a tall and very stout man, a field officer of Madras artillery, after marching about a mile and a quarter, took up a position with his battery, which for some time he directed and worked with great energy. Suddenly he was seen to stagger, and would have fallen had he not been caught hold of by two of his own gunners. He was laid down insensible, and, when seen by the surgeon, he was bled. On passing shortly afterwards to see a wounded officer and some men of my own regiment, I was so struck by this officer's altered appearance—so altered that I scarcely recognised him—that I could not help remarking to the assistant-surgeon of artillery who was then with him, and whom I knew, that I feared the major was dying.

He then told me he had been bled, but he (the assistant) thought without much benefit. Half an hour afterwards, as he could not find his own surgeon, he came to ask me to go and see Major O. I went at once, but alas! only to find the poor fellow in articulo mortis, quite unconscious, his skin cold and clammy, and complete inability to swallow. He died shortly after.

The other case was the brigade-major of the Madras troops.

On moving on with the 51st, the companies in front were already engaged. I met a wounded sergeant returning to the rear. As there was a wound on the scalp and some hemorrhage, I stopped for a few minutes to examine and dress it, and to show him the field hospital to which he was to go. Just as I was leaving him he said, "I am afraid, Sir, poor Captain B. is very badly wounded, but I think Dr. M. is with him." On hearing this I hurried on, but before overtaking the regiment I saw an officer sitting under a bush, about twenty yards off the pathway. On coming close enough to see that it was the brigade-major of the Madras troops, I went towards him, thinking he might be unwell. He said, "Oh, no, but as I am rather tired"—he had had a good deal of running about, his horse not having been landed—"I am waiting for the 9th Madras, as I have an order for Major R." On hearing this I told him the 9th were coming up behind me, and I hastened on. Within little more than a couple of hours I happened to meet on the field the brigadier commanding the Madras troops—my own colonel—when he stopped to ask me if I knew that poor Major G. was no more.

On subsequent inquiry I learned that Major G. had gone on to meet the 9th; that on reaching the regiment he was scarcely able to stand or to articulate; that in a short time he became insensible and was bled. Within, I believe, an hour, or, at any rate, an hour and-a-half *post*, if not *propter hoc*, he was dead.

I confess to some reluctance in mentioning these cases, as I may seem to be reflecting on the treatment employed. This is not my intention, but as I believe that bloodletting in this disease, as a general rule, is a most injudicious and injurious practice, I mention these cases to show that it is far from being a successful one.

Having, however, mentioned these cases, I think it fair to mention another, that of the brigadier commanding the artillery, who was knocked down about the same time as Major O. In this case venesection was also practised, the surgeon thought with marked relief, certainly with complete recovery; but still, I cannot help thinking, judging from other cases, that the recovery would have been as complete, and probably more rapid, had depletion not been used, for many of the cases treated without bleeding were quite well in the evening, and at duty the following morning.

In the case of which the particulars of the treatment are mentioned—in the paper above alluded to—Dr. Gordon remarks that there was a desire for drink indicated on the part of the patient, and that cold water being given to him, he drank it with avidity. I knew a case of this disease (coup de soleil) in which a draught (not a large one) of cold water was permitted, as soon as the patient had recovered his consciousness and was able to swallow. He had scarcely taken it when he was suddenly seized with a sudden and severe convulsive fit. Was this an accidental sequence or a consequence? I believe it was caused by the sudden impression of cold, which, in the existing state of depression, acted like a blow on the great ganglia behind the stomach. In similar circumstances I have always borne that case in mind. It proved fatal.

All these unmistakable symptoms of depression, and the favourable results of the non-depleting treatment, convince me that in this disease the congestion of head and capillary system will not be relieved by lowering remedies. That the disease is one of depression—affecting in some way probably the great nerve of organic life—seems to be clear from the fact that it seldom occurs except after fatigue and exhaustion under a tropical sun, aggravated, no doubt, by whatever tends to obstruct the freedom of the venous circulation of head and neck, and to produce such obstruction I know nothing—short of hanging—more effectual than the old leather stock, and tight coatee collar.

The important question which remains to be answered is, Can anything be done to diminish the tendency to this and other diseases among European troops

during active service in tropical climates? I reply, that temperate men, *properly dressed*, with tolerably regular meals, in some degree acclimated, and not overworked, can, as the records of Indian service prove, do good work in most parts of India, at all hours of the day, and at all seasons of the year. But, if they are overworked, and if that overwork be long continued, and if exposed night and day without tents, although I do not doubt that even under such circumstances they will achieve glorious results, still I believe they *must* do so at a fearful cost, and if the mortality before Delhi has been happily small compared with that in General Havelock's force, it was chiefly from the former force being engaged in position where they no doubt had good food, tolerably regular meals, and tents to shelter them, while the latter gallant band must have been too often in totally different circumstances.

What the clothing for European soldiers in the tropics should be, there can scarcely, I humbly think, be two opinions; first, as regards the head, it should be a light woollen forage-cap, with a good peak, and protected by a good turban, the curtain coming well down to protect back of head and neck, and well round on each side to protect the temples—the turban need not be white; for the neck, a light black neckerchief—no pattern of stock is admissible on active service under a tropical sun. A good loose tunic or short frock or blouse of red serge or other light woollen texture, and blue serge trowsers, loose round the hips and *not* loose round the ankles. A good deal has been said about white clothing for the troops in India; white smock-frocks and trowsers and straw hats are very proper for men passing through the tropics on board ship, or for cantonment life in India, but on service they are utterly useless, and pith hats—although excellent non-conductors and most light and comfortable, are too fragile and easily damaged by rain to be useful for general wear. The men should be advised and urged to wear flannel, and should never move, even in the hottest weather, without their blanket—a good, stout, brown blanket—for if subjected to sleep in the night air without tents and without blankets, sickness must result. Indeed, it is difficult for those who have not felt it, to realise the intense feeling of chillness produced by sleeping, without some extra covering, in the night air, even at the hottest season of the year, in a tropical climate; and if we merely looked at the reading of the thermometer, it would be difficult to account for it. For instance, at Prome, in the upper part of Pegu, the thermometer was never in the cold weather at night lower than 47 or 48 degrees, generally about 50 degrees, and still, the feeling of cold was so intense that I have seen the whole regiment when turned out at night—although in their greatcoats—shivering on parade.

There is only one other subject which I will touch on, as it is one on which great difference of opinion seems to prevail, viz., what will be the probable effects of active service and its consequent exposure on the large European force which is on the shores of India? That, under proper management, there is no reason for undue apprehension I cannot for a moment think; but that the mortality, independent of the casualties of war, will exceed—far exceed—the ordinary mortality of cantonment life, cannot, I fear, be for a moment doubted; for the records of even the last Burmese war will force us to this conclusion. It would be unfair to take the experience of the first Burmese war, for every one who has studied the records of that expedition must have the conclusion forced on him that it was starvation and scurvy, not climate, which killed the 70 or 80 per cent. which perished in 1824–25–26. Nor will it do to take the campaigns of the Suttledge and Punjaub, for these campaigns were fought in the cold season, in an almost northern climate, and were all over in a couple of months. But taking the experience of the last Burmese war, during which, with all our discomforts, we had nothing—thanks to steam and to the care and forethought of Lord Dalhousie—under all the difficulties of active service to complain of, unless it was now and then unnecessarily bad biscuit and during the cold weather insufficiency of blankets for the men. Taking then the experience of this war, we find that in the three Queen's regiments which served throughout the fifteen months of its continuance, viz., from the 1st of April, 1852, till 30th June, 1853, the actual number of men who died *in Pegu* were 18th R.I. 316, 51st K.O.L.I. 243, 80th 280, total 839, or close on 30 per cent.—as, including drafts of recruits, the actual numbers who served in these three corps amounted to from 2,900 to 3,000 men; besides which

casualties by death the numbers invalided amounted to several hundreds more. Indeed, shortly before the announcement of peace, and while it was supposed to be doubtful, I estimated the effective strength of the 51st who would be able to take the field at something under 580, non-commissioned, rank and file, out of an aggregate number who had served in Burmah of 1,006. So that it will be seen that deaths do not in any way fully indicate the number rendered non-effective, in other words, the numbers required to keep a force up to its original strength; for by deaths, as will be seen above, we had lost considerably fewer than either of the other two corps, although I think the strongest, and equally exposed. Whether the ratio of sickness as well as mortality was less in the 51st I cannot say, but I think it probably was, and that if compared, the ratio of deaths to numbers treated would be found nearly the same in all.

But, it may be said, all this may only prove that Pegu is a more deadly climate than India proper. That Pegu is a deadly climate to Europeans exposed to its full influence, I readily enough admit—and the ratio of sickness and mortality among the officers was nearly equal to that of the men; but that it is a bit more unhealthy than most of the districts which, in all probability, will be the scenes of active operations in India, I no more admit than I am prepared to admit that, because an army perished on the heights of Sebastopol, the Crimea is a bit less healthy than England; and for this reason, that, as was the case with the English army after the fall of Sebastopol, the troops in Pegu, at least the 51st regiment, allowing a reasonable time for the men to have regained their health by rest and care, became as healthy, indeed more so, than we had ever been at Madras. To be sure we had lost, either by death or invaliding, all our weakly or sickly men, and there are in every regiment numbers of men, who, if they escape the fire of the enemy, will go through what would kill a great many others ten times over.—*Med. Times and Gazette, Dec.* 19, 1857, *p.* 624.

161.—ON THE ACTION OF ANÆSTHESIA.

Dr. Detmold remarked that members would recollect that, about the year 1847, he called the attention of the academy to certain propositions, which he then made, proving quite conclusively that carbonic acid gas is the efficient agent in causing anæthesia. The carbonic acid may be given as such, or one of its chemical ingredients may be so administered, that, finding in the blood the other constituents of this compound, carbonic acid gas is generated, and anæsthesia, to a certain extent, is the result. Thus we may administer oxygen in large quantities, in the form of nitrous oxyde (protoxide of nitrogen, or laughing gas), which has all the chemical reactions of oxygen, but is much more soluble in water and the serum of the blood than pure oxygen, and, therefore, is much more readily taken up. This compound meeting with the carbon of the blood, carbonic acid gas is formed in large quantities, with the production of anæsthesia to a certain extent. Or we may, on the contrary, administer the carbon, as the oxide of carbon or any of the hydro-carbons, alcohol, the ethers, &c.; in this case the blood again furnishes the other constituent of carbonic acid, oxygen, and anæsthesia is again the result.

The stage of excitement corresponds to the period of combination of these elements and the formation of carbonic acid gas. If the gas is administered as such, there will be no stage of excitement, but if the constituents combine slowly, and the gas is generated in limited quantities, there will be a corresponding state of excitenent. Thus, in the stupor of drunkenness, carbonic acid is exhaled in normal quantities, but as the stupor passes off, large quantities of that gas are exhaled. The venous state of the arterial blood, during anæsthesia, is another proof that carbonic acid is being generated in large quantities. If it is true that in *post-mortem* examinations of those dying while under the influence of chloroform, bubbles of air are found in the heart and blood-vessels, it is highly probable that this air is carbonic acid gas, unless, perchance, it has entered the circulation by some mechanical lesion.

The only means, in his opinion, of any avail in restoring a patient from profound or fatal anæsthesia, is artificial respiration, or such other means as, by ex-

citing reflex action, will restore respiration, and thus hasten the elimination of the carbonic acid gas. It has been recommended in threatened and apparent death from anæsthesia, to resort to the inhalation of oxygen or nitrous oxide. Reasoning from the premises which he had given, such remedies would be in the highest degree dangerous. To satisfy himself in regard to this fact, he had made numerous experiments upon animals, and invariably found a fatal issue hastened by administering oxygen.—*N. Y. Jour. of Med.*, May, 1856.

At a subsequent meeting, Dr. Detmold favoured the Academy with a written exposition of his views of the rationale of the action of chloroform, sulph. ether, and nitrous oxide, the three agents employed for the purpose of producing anæsthesia. He attributes the action of all of them to the production of carbonic acid gas *in the system*. The first two supply the carbon, which absorbing oxygen from the blood, and the last supplying oxygen, which absorbing carbon, in either case carbonic acid is the result, which by its action on the living organism produces anæsthesia. This theory, though not absolutely susceptible of demonstration, is yet apparently based on a logical foundation, and finds a seeming confirmation in a number of well known facts.—*Med. and Surg. Reporter.*—*Amer. Edin. Med. Journal, Dec.*, 1857, *p.* 537.

162.—ON THE USE OF BINIODIDE OF MERCURY, IN COMBINATION WITH THE RAYS OF THE SUN, FOR THE CURE OF GOITRE.

By Dr. F. J. Mouat, Inspector of Gaols and Dispensaries, Bengal.

In the districts about Motiharee, Segowlee, Bethiah, Bhagoha, and on to Goruckpore, indeed along the whole line of the Teraie, the goitre is so prevalent that it can scarcely be an over-estimate to state that in many localities, one individual in ten is afflicted with this horrible disorder.

In some cases the tumour attains a certain size, and passes into a chronic state, without serious inconvenience to the person affected; in others, it increases rapidly and, at the end of a few years, after becoming an enormous excrescence, terminates in loss of intellect in some cases, and in others in death.

In the cold weather of 1854–55, Captain Cunningham, second in command, 12th Irregular Cavalry, began to apply the biniodide to the goitre in the following manner:—

An ointment was prepared according to a formula, as follows:—

Melt 3lbs. of lard or mutton suet, strain and clean; when nearly cool, add 9 drachms of biniodide of mercury, taking care to make the powder fine by trituration in a mortar.

Work in the mortar until no grains of red are apparent in the ointment, and put in pots for use, taking care always to keep both powder and ointment from the rays of the light.

Use as follows:—

About an hour after sunrise, apply the ointment to the goitre with a spatula made of ivory, or thin, broad, smooth bamboo, quantity according to size of tumour—rub it well in for at least ten minutes. Let the patient then sit with the goitre held well up to the sun, and let him remain so, as long as he can endure it.

It is probable that about noon he will suffer severe pain from the blistering effect of the ointment, although no pustules are raised on the skin. About 2 P.M. the ointment should again be applied with a very careful and tender hand, and the patient should be dispatched to his home, with orders not to touch the ointment on any account with the hand, but allow it to be gradually absorbed, which absorption will be complete on the third day.

This treatment is quite sufficient for an ordinary cure. Should the case be a very bad one, the patient is ordered to return next year for the removal of what may remain of the tumour. Except in goitres of the very largest size this is seldom necessary. After the application of the second year no goitre has been known to continue.

The patients begin to come about the middle of November, and continue to the

end of March; after that time the sun's rays act so violently on the medicine, that it is not advisable to apply it.

The cures effected have been very numerous. On my arrival at Segowlee, I was glad to join Captain Cunningham in this good work; but with him rests all the credit of having established it.

The cases are not now so numerous as they were in 1855. At that time 500 or 600 were not unfrequently treated in a single day; a small charge of two pice for each cure was levied for some time, in order to make the people set more value on it; but as this seemed to check some patients, it was discontinued.

Until lately, no exact account of the numbers treated has been kept; but since Captain Cunningham commenced, up to the present time, it cannot have been less than 60,000. Many come from a very great distance, Goruckpore, Mozufferpore, Mulaye, but the cases in the vicinity are decidedly less numerous—in fact, the disorder is being extinguished. In no case, except one, have we failed to make a complete cure during the second year.

It appears to me that the rays of the sun, either by some chemical action on the ointment, or by causing its more rapid absorption, have much to do with the cures effected: but I am about to make the experiment of treating one man by night before a large fire, and comparing the case with one of a similar size and standing, treated in the usual way.

By this means I hope to ascertain how much of the cure depends on the action of the sun's rays, whether as regards chemical properties or the absorbents of the skin.—*Dublin Quarterly Journal, Nov.*, 1857, *p.* 500.

163.—*Cocoa-Nut Oil Ointments.*—The cocoa-nut oil is a more eligible body for the formation of ointments than lard, keeping much better, not staining the linen, and admitting of more complete absorption. To render the oil of commerce fit for pharmaceutical employment, it is in general sufficient to liquefy it at a moderate temperature, and strain it through linen. But if it retains its peculiar odour too strongly, and is of too yellow a colour, it may be purified by digesting it for some hours in a water-bath, with some coarsely powdered vegetable charcoal, and filtering it while warm through paper. The following are some of the formulæ that have been tried with success:—

℞. Iod. pot. ʒj., ol. cocos, ℥j.

℞. Ext. bellad. ℈j., ol. coc. ʒiij.

℞. Veratrini, gr. iij., ol. coc. ʒiij.

℞. Sulph. quin. ℈j., ol. coc. ℥j., ol rosar. gt. x. (very useful in pityriasis capitis.)

℞. Chlorof., ol. coc., ãã ℥j. (of great service in neuralgic and rheumatic pains, rendering the chloroform more fixed, and its action more durable.)

℞. Ol. terebinth., ol. coc., ãã ℥j.

℞. Hydr. ox. rub. gr. iv., ol. coc. ℥ij.—*Omodei's Annali.*—*Med. Times and Gazette, Jan.* 16, 1858, *p.* 69.

164.—SULPHURIC ACID AND SULPHATE OF ZINC AS A CAUSTIC AGENT.

By Henry Thompson, Esq., Assistant-Surgeon to University College Hospital, &c.

[The action of sulphuric acid as a caustic depends upon its powerful tendency to combine with the elements of water contained in the organized tissue, so that the carbon is left free, forming a black charcoal-like mass. As it is desirable that the acid should be mixed with some substance to render it more manageable, this must not be such as will furnish the elements of water, or the acid will be thereby weakened; for this reason saffron, as first suggested by Velpeau, is ineligible.]

Nearly two years ago I observed this effect, and it occurred to me that we might economise the power of the acid by employing carbon in some simple form—common pulverised charcoal, for example—as the material with which to make the acid into a manageable form for use. Accordingly, so long ago as the summer of

1856, Mr. Squire, of Duke-street, made this paste for me, and I employed it successfully, with considerable advantage, for limited surfaces requiring a powerful caustic. Nearly a year ago, Ricord, of Paris, published this same combination as the best form of caustic for the treatment of chancre, stating it to be superior to nitric acid or the Vienna paste, which latter he had previously used.

In this case the thickening material of the paste at least does not impair the caustic power of the acid, but it appeared desirable to find, if possible, a material for thickening which should not be merely inert, but which should bring with it fresh caustic power, so as to produce a combination possessing the greatest possible destructive force. This suggested itself to me in the form of the dried sulphate of zinc, in powder, itself a caustic of considerable strength, and well known to have been employed by Professor Simpson, especially for the destruction of some growths from the uterus. By mixing this with strong sulphuric acid, a paste of sufficient consistency is produced, and one that is endowed with exceeding power as a caustic. I employed it first in July last, in the case of an epithelial growth springing from the outer canthus and neighbouring temple of a woman, aged seventy, in the Marylebone Infirmary. I deemed it unadvisable to remove this tumour, which was the size of a walnut, by the knife, because it was very broad, and because it encroached upon the upper eyelid especially. After six applications, some of them slight and involving only small portions of the tumour, it entirely disappeared, and had cicatrised soundly in September. At no time was there any hemorrhage whatever. I exhibited the woman at the Medical Society of London in October, a report of which appears in this Journal of November 14th. The patient was asked on that occasion, by some of the fellows present, on which side the tumour had existed, so complete had been the removal and so slight was the resulting scar. I may add that she remains perfectly well at the present moment.

One advantage of this combination consists in the ease with which it is prepared, and in the fact that its constituents may be found in any chemist's shop or surgery. The ordinary sulphate of zinc is to be dried in an oven or sand-bath, so that the water of crystallization is driven off, and a whitish powder remains. Enough of this is to be added to some strong sulphuric acid, in order to make a semi-fluid mass of consistence sufficient to prevent its running beyond the spot on which it is placed. The mixture should be kept in a stoppered bottle, and be applied with a small glass spatula or rod. Before using it, the surrounding parts should be protected by a thick layer of cerate or firm ointment, so as to form an embankment limiting the surface to be destroyed, and a layer of the caustic may be made upon this of about the eighth or tenth of an inch in thickness. This is allowed to remain. As in the case of other caustics, I believe, the pain is less in the superficial than in the deeper diseased tissues. In the case mentioned, but little suffering followed the first application, but in subsequent dressings, as deeper and more highly organized tissues were reached, the suffering was severe. Incisions were made through the first slough to admit of the access of the caustic to these parts. There appears to be reason to believe that the amount of pain caused by all caustic application is less the result of any specific property of the caustic itself, than of the degree of sensibility existing in the part or structures attacked. Other things being equal, there is little doubt that the more powerful and rapid the action of the caustic, the less is the pain inflicted. On this account, as well as on other grounds named, the paste in question has appeared to me to deserve the attention of the profession, for use in those instances in which its employment is to be regarded, as in the case cited, a better method of procedure than ablation by the knife.—*Lancet, Jan.* 9, 1858, *p.* 34.

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165. *Liquor Opii Sedativus*.—This drug may be largely used in cases of strumous ophthalmia in children, properly reduced in dose, being not more prone to disagree, while much more reliable than either tincture of hyoscyamus or paregoric. Diarrhœa is held to be one of the main indications for its use, and if the bowels are constipated it is never given, at least until free purgation by scammony and calomel has been first effected. In cases in which the intolerance of light is great, the bowels irritable, and the child very restless, a full opiate at night, with bark in

the day, is often very quickly effectual. The form of bark usually prescribed to children is the liquor cinchonæ prepared by Battley, but for adults quinine itself is held to be much more efficient. The chlorate of potash in full doses, as an alterative saline, in certain cases of pustulo-strumous ophthalmia, has recently come into much favour. A detailed examination is, however, being made as to its merits, and as to the class of cases for which it is best suited, and at present it would be premature to speak dogmatically.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 36.

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166. *Turpentine as a Detergent.*—We noticed in use the other day at the Dreadnought, the oil of turpentine as a wash for stumps, &c., which may have got coated with plaster or other adhesive material. It is, we believe, also used at several other hospitals for the same purpose. The part is freely washed with tow dipped in turpentine. It does not appear to unduly irritate, but restores a healthy glow to the cutaneous surface, and the patients describe its effects as being pleasant rather than otherwise.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 34.

167.—ON THE THERAPEUTICAL EFFECTS OF GALVANISM.

By John Grantham, Esq., Crayford, Kent.

Recently I have witnessed several cases of exceedingly painful affections of the feet, the sequence of rheumatic inflammation, with diminished and unequal power in the muscles of the leg and foot, also decreased temperature and tumefaction of the cellular structure, a condition not yielding to either general or local treatment with or without rest, resisting those principles of the practice of medicine which are now considered to be "rational." It is to the "rational practice of medicine" alone we ought at this time to direct our whole attention in contending against the many empirical systems so liberally paid for by the opulent; and I would here remark 'tis a pity so many causes do arise to produce distrust in the minds of the public in respect to the many solid truths known and practised by our profession, especially by those who have kept their minds alive to all the improvements; but unfortunately for us only to be acquired after spending many years in unceasing labour, amidst almost every hindrance.

Galvanism is an agent used by the empiric; and why? Because the Profession have not made themselves practically acquainted with its utility in the treatment of diseases. My late friend, Dr. Marshall Hall, in his "Synopsis of Diastaltic Nervous System," page 76, says:—"There is a question in reference to the application of galvanism to the animal frame of the most intense interest. A current cannot pass without inducing an electrogenic state; the current may be applied and changed. It has been designated the 'Alternative Voltaique,' from its discoverer, as seen in the lower animals. The change of the current, I am now satisfied, is often attended with the most beneficial results, in lessening the irritabilities of the muscular fibre. Dr. M. Hall also puts the following question:—"What is the most probable good or therapeutic effect of galvanism? It may excite the failing heart in asphyxia or syncope, and the uterus in inertia of this organ. It may exercise the nervous and the muscular systems, and so restore them in some measure from atrophy and debility. It is in this manner useful in the paralysis remaining after the organic cause of the disease may have been removed. It may be useful in paroxysmal paralysis, in paralysis of the facial nerve from cold, in some hysteric forms of paralysis," &c.

Case 1.—Richard Aspin, aged 34 years (printer), sixteen weeks ago was attacked with lumbar pain, which continued three days. After leaving the lumbar region, it extended to the left hip and foot, attended with great coldness of the limb, inability to walk more than fifty yards without acute pain, completely incapacitating him from working as a block-printer. The locality in which he resides is damp, and surrounded with malarial exhalation. He is a man of temperate habits. After going through treatment both general and local without any benefit, he commenced the application of galvanism to the limb, by passing the current alter-

nately from the spine to the foot, and from the foot to the spine, from a battery of 24 cups, containing circular plates of zinc and copper. In seven days the temperature of the leg returned to its normal standard, and the pain entirely abated, so as to induce him to resume his employ; but, in consequence of so early a return to labour, the pain returned on the third day. He again underwent the application of galvanism, with rest, or rather moderate walking, without inducing fatigue. After ten days a full return of power and cessation of pain was maintained. He is now, at this date, September 1st, 1857, to use his own expression, "never better in my life." This case is illustrative of the potent effects of galvanism; so much so, that, unless witnessed, the reader could scarcely credit the superiority of this agent over every other means in the removal of pain, and also in the restoration of muscular power.

Case 2.—James Manser, aged 30 years, a ship's carpenter, stated that about seven years since he had been the subject of rheumatic fever. In the meantime, whenever he has been exposed to damp with fatigue, he has had pain and swelling in both feet, which have frequently disabled him from duty, and only mitigated with rest, aperients, the mineral acids, hot baths, iodide of potash, and counter-irritation, but without any permanent relief, especially during the last three years. In September of this year he commenced the application of the galvanic current through the feet, passing it from the heads of the fibula to the feet, and, after seven days' application of the galvanic current, he felt so far relieved from pain and swelling, as to enable him to return to his duties on board an Ostend steam-vessel.—*Med. Times and Gazette, Nov.* 7, 1857, *p.* 473.

168.—*Bichromate of Potash as an Astringent.*—Mr. Lloyd, in some remarks to his class the other day in his Syphilitic Ward at St. Bartholomew's, spoke very highly of the good effects which he had obtained from solutions of the bichromate of potash used in cases requiring astringents. We understand that the same remedy is much employed at the Liverpool Infirmary, for the removal of fœtor from sloughing wounds, &c. The power of the solution as a preservative fluid is well known. Mr. Lloyd stated that he had begun with five grains to the ounce, but increased it to a drachm. In one case of very chronic leucorrhœa, in which the lips of the os uteri were swollen and spongy, it had effected a complete cure, after many other remedies had wholly failed. It is being used at St. Bartholomew's as an application to warts, &c.—*Med. Times and Gazette, Jan.* 9, 1858, *p.* 34.

169.—*Opium in Uterine Hemorrhage.*—[The following case which occurred in the practice of R. F. Snape, Esq., of Bolton-le-Moors, well illustrates the value of a moderate dose of opium in producing uterine contraction during labour, in cases of deficient power from exhaustion or fatigue.]

I was summoned, Feb. 27, at midnight to attend Mrs. P. I found that the liq. amnii had escaped without any pain, at 3 p.m., on the 25th; in about eight or ten hours she suffered considerably from spurious pain, which she recognised, and did not in consequence send for me. Owing to this pain she obtained very little sleep or rest from the time of the escape of the waters; and when I saw her she was much wearied from sleeplessness and fruitless pain. I found the os uteri dilated to the size of a five-shilling piece, and very dilatable, and the vagina in a favourable condition for the speedy termination of the labour. After waiting a time, and finding the pains decrease in strength and frequency, I gave her a full dose of secale: the effect was *negative.* Another hour having elapsed, and the pains less satisfactory, I gave her twenty-five drops of laudanum in a little water. In ten minutes a vigorous pain occurred; this was rapidly followed by three others, and the child was born. Another pain expelled the placenta, and the uterus contracted firmly. Mrs. P. has had no pain since; she is, in fact, quite well.—*Med. Times and Gazette, March* 6, 1858, *p.* 254.

170.—*Injection of the Knee-Joint with Tincture of Iodine.*—Mr. Erichsen

adopted, in a case of chronic effusion into the knee-joint, under his care in University College Hospital, a few months ago, the treatment by injection of iodine. Although so highly praised by Velpeau and other French surgeons, this practice has not hitherto found many English medical men bold enough to pursue it. Mr. Callaway, of Guy's, we know entertained, from what he had seen of it in Paris, a very favourable opinion of its merits; but he did not, we believe, ever actually do it. Mr. Erichsen's patient was very well suited for it, the hydrarthrosis having existed for a considerable period, and the general health being good. Much treatment had also been previously adopted, with only very transient benefit. The injection was performed on Dec. 2, about six ounces of amber-coloured fluid having been previously withdrawn by the canula. Only a drachm of the compound tincture was thrown in, but the whole of it was allowed to remain. A certain degree of pain, &c., was present in the joint for about a week afterwards, but it was not at any time excessive. The man left the hospital, very much benefited, six weeks after the injection.—*Med. Times and Gazette, March* 6, 1858, *p.* 247.

171.—ON THE TREATMENT OF ENLARGED BURSÆ.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

The treatment of enlarged bursæ has given rise to much difference of opinion and practice. Reasoning from analogy, we might conclude that inflamed bursæ should be treated as inflamed synovial membranes, and indolent bursæ as encysted tumours. To a certain extent this may be true; but a great deal depends on the circumstances of each case. It is evident that active inflammation must be subdued by active means; but when this has been done, or when the tumour is naturally indolent, what treatment should we pursue? The principal methods recommended are—1. Rest and pressure. 2. Counter-irritation, mercurial or iodine frictions, &c. Abundant evidence exists to show that these and other similar means generally fail to effect a permanent cure. 3. Excision of the sac. In cases of small consolidated tumours this practice may sometimes be adopted; but extirpation of the bursæ is a severe operation; it has been followed by considerable inflammation, great disturbance of the health, and in some cases by death. 4. The bursal tumour, again, may be treated as a chronic abscess. It may be laid freely open by incision, or the contents may be evacuated, and iodine injections thrown in to modify the action of the lining membrane. 5. The practice, however, which I adopt myself, and which I would recommend, is more simple than any of the preceding; yet I have found it effective. The enlarged bursa is punctured with a grooved needle, such as is used for exploring tumours and swellings of a doubtful character. After evacuation of the contents, pressure is applied by means of soap-plaster and bandage; this is renewed from time to time, and puncture of the sac also repeated if necessary. The result is generally a permanent and safe cure. Even in cases where the bursæ are inflamed, and the skin over them red, I should prefer the puncture now noticed to making any incision into the tumours or supposed abscesses.—*Lancet, May* 8, 1858, *p.* 454.

172.—THE TREATMENT OF NÆVUS BY INJECTIONS WITH TANNIC ACID.

[Mr. Haynes Walton recently treated a vascular tumour in the orbit by an injection of the solution of tannic acid. The following case also occurred in his practice at St. Mary's Hospital.]

A subcutaneous nævus was observed at the root of the nose in an infant eight months old. It was treated by iodine paint and cold lotions without benefit, and the increase induced the parents to send the child to a London hospital. There was now, five months later, a tumour as large as a marble, soft, capable of being much reduced by pressure, and covered by perfectly healthy skin. Mr. Walton at first applied a ligature subcutaneously, but unsuccessfully; indeed this seemed

rather to hasten growth. Then he resolved to inject with tannic acid. An aperture was made at the base of the tumour with a narrow tendon knife, which was moved about with the view of breaking down some of the texture, in order that the injection might have sufficient contact with the blood, and produce that peculiar coagulation which this agent is capable of effecting. The nozzle of a small syringe filled with a solution of the salt, in the proportion of a drachm to an ounce of water, was passed into the wound, and the fluid quietly thrown in till the nævus was well distended. Mr. Walton laid much stress on the gentleness of injecting, and the propriety of ceasing directly that the tension of the tumour was apparent, lest extravasation should happen. The hardness that quickly ensued proved the rapidity of the coagulation.

The special advantages of the plan are its potency and safety. The action of the tannic acid on the blood is certain, a peculiar coagulation being at once produced. There is no risk of sloughing, an occurrence that is apt to ensue when the muriated tincture of iron is used, and when it is due to the free acid it contains. The child attended at the hospital for a week, and then left for the country, there not being yet any apparent alteration. It was seen at the end of three weeks, and a very considerable reduction was manifest, and to the touch there was a sensation of lumps beneath the skin. Mr. Walton saw the child for the last time just six weeks after the operation, when there was no appearance of a tumour, and except that the integuments at the spot were a little hard, there was no trace of the former disease. No one, he says, would have told by mere ocular inspection that a nævus had existed.—*Lancet, May* 8, 1858, *p.* 459.

173.—TREATMENT OF BOILS AND CARBUNCLES.

By Buxton Shillitoe, Esq., 34 Finsbury-circus.

I have lately, in common with every one else, had a great many cases of boils and carbuncles. I have tried almost all the ordinary methods of treatment, and find that if a carbuncle or boil be seen in its earliest stage, it may almost always be dispersed, or prevented from acquiring any great size. My plan is to order a thick solution of the aqueous extract of opium, of the consistence of treacle, to be painted on and around any suspicious spot that may arise. This soon dries, forming a coating, which requires renewing three or four times a day. Generally twenty-four hours' application is sufficient to arrest the further spread of the inflamed spot. I then order a plaster of equal parts of soap, mercury, and opium, spread on thick leather, to be placed on the spot. If there is a pustule, I evacuate it, and leave a small hole in the centre of the plaster to allow of the escape of any matter, or if painful, for the application of the opium and poultice. When it is desirable to poultice, I take care that the plaster is large enough to protect the surrounding skin, and I discontinue the poultice as early as possible. In this way, with early attention to small spots and a limited amount of poulticing, combined with ordinary care in diet, occasional aperients, and tonics, of which last I prefer bark and nitric acid, I seldom find any difficulty in preventing the successive crops of boils now so common.

When called in at a later period, or if in spite of treatment a boil or carbuncle will have its course, I think strong nitric acid to be the best application, using it freely two or three times, removing the dead tough slough before each application, supporting the margins with the plaster, and poulticing freely. The beneficial action of the opium depends upon the local influence which it exerts upon the capillaries, small arteries and nerves, lessening pain, favouring exudation from the engorged vessels around the central spot, while nearer the circumference it hinders the spread of the zone of active congestion, counteracting the stimulating effect of the inflamed spot upon the surrounding nerves and blood-vessels. This is shown by its lessening the throbbing, heat and redness, limiting it to the spot alone, from which a small deep core has frequently to be removed, the surrounding parts soon recovering, if supported by the plaster.

The use of the plaster is obviously to give support to the inflamed vessels, and to protect the surface from the atmosphere, and is useful in all cases, and in all stages.—*Med. Times and Gazette, March* 6, 1858, *p.* 254.

174.—ON THE ACTION OF GALVANISM UPON THE CONTRACTILE STRUCTURE OF THE UTERUS, AND ITS REMEDIAL POWERS IN OBSTETRIC PRACTICE.

By Dr. F. W. Mackenzie.

(Read before the Royal Med. and Chir. Society.)

[In the present divided state of opinion as to the effective and remedial powers of galvanism upon the gravid uterus, further investigation of the subject seemed to the author most desirable. Two points of a preliminary nature require first to be decided before the agent can be satisfactorily employed in midwifery:—1st. The nature of the influence exercised by it upon the contractile structure of the uterus; and, 2ndly, The best mode of applying it so as to obtain the full benefit of such influence. The author has instituted some experiments upon the gravid uterus of the lower animals, in which the organ was exposed and the exact influence exercised by the galvanism was observed.]

From these experiments it was shown that galvanism exercises a remarkable and peculiar influence upon the uterine fibre, and it further appeared after many observations that this was most powerfully exercised when the galvanic current was directed longitudinally through the uterus from the upper portion of the spinal cord in a sustained and a continuous manner. The local application of galvanism to the uterus was less effective; individual shocks produced no appreciable effect upon it, and a current directed transversly through the organ produced only a partial contraction of it in the direction of the current. Guided by the information thus obtained, the author had employed galvanism in the manner suggested by these inquiries in several very critical cases with remarkable success. The first referred to was that of a lady who had had repeated floodings in connexion with an early abortion, owing to an imperfect separation and expulsion of the ovum. In this every available means had been tried to stimulate the uterus and control hemorrhage without success, and the patient's condition had at length become highly critical. In this emergency a sustained current of electricity was directed longitudinally through the uterus from the upper portion of the spinal cord, and under its influence the cervix uteri became relaxed, and expanded after the first application, and uterine action set in after the second, which was followed by the expulsion of an organised membrane, upon which the hemorrhage ceased, and the patient rapidly recovered. The second was a case of placenta prævia, in which several alarming hemorrhages had occurred before labour had commenced. In this a sustained current, applied in the manner stated for six hours, not only prevented any further hemorrhage, but so accelerated the dilatation of the os uteri, that the hand was readily introduced, and delivery completed with safety to the patient, although the child, from the extensive separation of the placenta, was still-born. In a third, excessive hemorrhage had occurred in a primipara in the last month of pregnancy, and, as the placenta was felt to be attached to the cervix uteri, it was thought desirable to bring on delivery. With this view a sustained current was applied for three hours; the hemorrhage was almost immediately arrested, and the labour had advanced so rapidly, that in a few hours afterwards it was completed by the birth of a living child. The author referred to other cases, in which he had successfully employed galvanism in obstetric practice, and, with reference to those related, submitted that they appeared to him to warrant the three following conclusions:—

1. That a sustained current of electricity of moderate intensity, passed through the gravid uterus in the manner described, exercises a remarkable influence in increasing the tonicity and contractility of the uterine fibre.

2. That in such increased tonicity or contractility of the uterine fibre, so excited and sustained, we have a powerful and reliable means of moderating and controlling uterine hemorrhage, whether of the accidental or unavoidable variety, and of simultaneously accelerating the dilatation of the os uteri and the general progress of the labour.

3. That such sustained current of electricity may be continued for a lengthened period, when the object to be attained requires it, without any appreciable pain or inconvenience to the mother or danger to the child.

Mr. Foster said he was present at one of the cases referred to by the author, and went to it with a prejudice against the use of galvanism in the manner described, believing that it could have no effect over the contraction of the uterus, and in preventing hemorrhage in placenta prævia. The result, however, satisfied him that Dr. Mackenzie's experiments deserved the careful attention of all who followed obstetric practice. He had never seen anything that controlled the hemorrhage of placenta prævia so perfectly.—*Med. Times and Gazette, March* 6, 1858, *p.* 256.

175.—*Belladonna in Incontinence of Urine.*—We have had occasion lately to see two cases among Mr. POLLOCK's out-patients at St. George's Hospital, in which belladonna has been administered in incontinence of urine with the same favourable result as we have had so often occasion to notice in former cases. The first patient was a boy aged 10, who had suffered for a long time from incontinence of urine, without any visible cause. All the usual remedies had been tried, but with no good effect. He made water constantly in the day-time, and very frequently at night. He was sounded, but no stone was detected; and the urine, on examination, appeared quite healthy. He was ordered one-twelfth of a grain of extract of belladonna three times a day, and five grains of calomel and scammony twice a week. The belladonna produced an immediate effect, marked improvement being noticed even after the first dose. After rather more than a month's attendance, he was discharged quite cured.

In the other case, the incontinence followed the operation of lithotomy, performed some months ago by Mr. Pollock. Here, also, the same treatment was effectual in relieving the symptoms; but the patient was not quite cured when we last saw him, although there seemed little doubt of his speedy recovery.—*British Med. Journal, March* 27, 1858, *p.* 239.

176.—*Citrate of Iron and Strychnia, a New Therapeutic Agent.*—For a long time back a therapeutic agent of very efficient properties has been used with considerable success at the Royal Free Hospital, in cases of dyspepsia of an atonic character, by Dr. O'CONNOR. He has also found it productive of great benefit in similar conditions depending on functional derangement of the uterus. In these cases it acts as an emmenagogue when all other remedies have failed, and it has a powerful effect in tranquillizing the excitement of the nervous system. This preparation is a citrate of iron and strychnia, the dose of which is about 3 grains three times a day, to be taken immediately after a meal. There is now a case of chorea in the hospital under the care of Dr. O'Connor, immediately brought on by the patient being frightened by a thunder-storm in August last, since which time she has, without any intermission of the symptoms, been a sufferer. In this case the citrate of iron and strychnia has been only used for a few days, and already with marked benefit. The case is one of interest, and we purpose at a future time giving it in detail. The preparation which Dr. O'Connor uses is made by Mr. Bastick, of Brook street, Grosvenor-square.—*Med. Times and Gazette, Feb.* 27, 1858, *p.* 220.

177.—THE CHEMISTRY OF CAUSTICS.

By WILLIAM BASTICK, Esq., London.

applications of chemistry to the sciences of medicine and surgery,
which has been so little studied or written upon as the Chemistry
ving recently had my attention called to this fact, while making
into the nature of caustics, and especially their mode of action,
iefly before those interested in this subject, the conclusions
llacious the labours of future and abler investigators may

It seems to me that caustics, with reference to their action, may be divided into two great classes, namely, one which comprises those which merely kill or destroy the vitality of the living tissue; and the other, which includes those which not only destroy the vitality of the living tissue, but decompose or dissolve the tissue whether dead or living.

As examples of the former class, may be enumerated chloride of zinc, sulphates of copper and zinc, bichloride of mercury, &c.; and as examples of the latter class, may be mentioned caustic potash, nitrate of silver, manganese cum potassa, chromic acid, &c.

Another distinctive feature of these two classes is, that while the latter destroys and decomposes the living or dead tissue, the former, having killed the living tissue, acts afterwards as a powerful antiseptic or preservative of it.

It is not within my province to point out to those extensively employing caustics, to whom these facts may be new, the importance of bearing in mind this distinctive feature between the two classes of caustics, when selecting the description of caustic to be employed in any given case.

Although caustics may be conveniently divided in the manner described into two principal classes, these classes can be further subdivided into many others, because the mode of action is frequently distinct in each individual case, whatever the final result may be on the living tissue.

To illustrate this point, the modes of action of caustic potash and chromic acid may be cited. When the living tissue is placed in contact with caustic potash, the destruction of its vitality ensues by the potash dissolving its albuminous and fibrinous components. In fact, acting in the manner described by chemists for obtaining the various protein substances from organic matter. Of course I only allude to the leading features of the action of caustics in this instance as well as in others. When the same tissue is treated, chromic acid, instead of obtaining a solution of the protein compounds of the tissue, and thus destroying its organised structure, the tissue is destroyed by a slow process of combustion; or, in other words, it is oxidized at the expense of the oxygen of chromic acid, by reason of the facility with which that acid parts with its abundant oxygen when in contact with organic bodies. The manganese with potash acts in a similar way as a caustic to chromic acid, but in consequence of the permanganic and manganic acids which it contains being in combination with the base potash, its action is more controllable and persistent. It may not be here out of place to mention what appears to me to be a practical advantage that the destructive caustics, if I may so term them, possess over the conservative ones. In doing so I beg to state, once for all, that I offer my opinions on such points with great diffidence, knowing that chemistry is not medicine or surgery, but only one of their instruments. The practical advantage is this:—When the surgeon desires the removal of a diseased tissue by caustics, if he uses a conservative caustic he kills the tissue, but has to effect its separation by a further process of suppuration, &c., whereas, if he employs a destructive caustic, the two processes are in simultaneous action, and the desired result is consequently more speedily accomplished.

Nitrate of silver is essentially an oxidizing caustic, but its action is much slower than that of chromic acid or manganese with potassa, from the circumstance that it does not so readily part with its oxygen, and it forms an insoluble compound with organic structures which acts as a preventive to its continuous power as a caustic, by forming a sort of impermeable coating on the tissue to be removed. I am aware that this action is an advantage where hemorrhage is to be feared.

The exsiccated sulphate of zinc and copper, when employed as caustics, act like chloride of zinc by their powerful affinity for water. But when the vis vitæ is destroyed by such affinity, their further action is that of strong antiseptics, thereby greatly, if not entirely, retarding the natural disruption of tissues which have ceased to possess vitality. Bichloride of mercury, and in fact, all mercurial caustics possess a conservative action by their strong affinity for the albuminous components of organic structures with which they form compounds of definite character.

Nitric and sulphuric acids belong to the class of destructive caustics; the action of the former is that of the oxidation of the tissues, while the latter owes its power as a caustic to its power of extracting the elements of water from organized

bodies, behaving like the exsiccated salts previously mentioned, with which it is sometimes judiciously combined to prevent the spreading of the acid beyond the parts to be destroyed by reason of its fluidity when uncombined.

Chloride of gold has been extensively employed, generally in combination with other caustics, in some of the continental hospitals. When placed in contact with organic matter, this salt is reduced to a metallic state similar to the action of nitrate of silver; but as far as my experience goes, it is inferior as a caustic to the silver salt, because of the large quantity of oxidizing material which is set free when the organic matter is treated with nitrate of silver. Among the conservative caustics, arsenic and its compounds will find its proper class; for although arsenic is poisonous to living tissue, it is a powerful antiseptic agent. It forms no combinations with dead or living tissue, and only a feeble one with albuminous matter; and from this cause it must be regarded in a chemical point of view as a very inefficient caustic.

Chlorides of antimony and iron, which have been used as caustics, exhibit a mode of action similar to chloride of zinc. The very feeble action of the latter must in some cases be its principal recommendation.

It will be evident from the previous statements that chemistry will supply us with an indefinite number of caustics; for it is clear that whatever decomposes or combines with living tissue sufficiently to kill it, is, to all intents and purposes, a caustic. It is equally manifest that, while it is the essential condition of every substance professing to be a caustic, that it should kill the living tissue, it by no means follows that all caustics performing this condition should destroy or dissolve away, as it were, the tissue when no longer possessing life, for this latter property belongs to a distinct class of caustics.

I am aware that I have not noticed the so-called irritant action of caustics; but in explanation I reply that the consideration of this action is foreign to the purpose of this communication, and moreover, is a subject not within the province of the chemist.—*Med. Times and Gazette, April* 10, *p.* 371.

178.—THE DIAGNOSIS AND TREATMENT OF SYPHILIS IN ITS PRIMARY FORMS.

By H. Thompson, Esq. (Read before the Harvelan Society of London.)

Mr. Thompson commenced by demonstrating the importance of deciding promptly upon the nature of the primary forms of syphilis, in relation to treatment and prognosis. He stated that our knowledge of syphilis had greatly advanced during the last few years, thanks to numerous observers in this country and abroad; but that to Ricord the merit is pre-eminently due of having defined the great laws which its phenomena exhibit. Without giving his adhesion in every respect to all the dicta of that illustrious observer, the author of the paper asserted that a careful examination of the subject compelled him to declare his conviction, that on almost, if not on all important points, his doctrines were supported by the phenomena of syphilis as presented in this country.

Primary syphilis was defined as a specific disease communicated by a virus of which the earliest manifestation is a chancre; and secondary syphilis, as a constitutional affection, which, excluding hereditary transmission, originates always from a chancre, and manifests itself by characteristic symptoms, which follow, with more or less regularity, a certain order of evolution.

Two distinct varieties, and two only, of chancre, were stated to exist—the soft or non-infecting chancre, and the indurated or infecting chancre. Either of these might be attacked with phagedæna or sloughing, although much more commonly the former; but these conditions are the result of external circumstances, and not of any inherent quality in the sore itself. He laid down as a principle, that, on [illegible] primary sore in the early stages, we might, in five cases out of six, [illegible]te to the patient at the outset a distinct prognosis as to the occur[illegible]ry symptoms, or the contrary, without risk of error; and that, in [illegible]ght select the appropriate treatment at once, and pursue it with

[illegible]fined the external characters of the indurated or infecting

amiss to relate an example of the caution requisite in the use of this powerful drug. For a lady who had for many years suffered intensely from attacks of headache, I prescribed the alcoholic extract. The remarkable relief which she derived from this medicine made her anxious to have it always at hand. The dose to which she had become accustomed was half a grain in a pill, and she was allowed to repeat the dose once after two hours if the pain persisted. She took a supply of such pills with her into the country, and she was in the habit of resorting to them as occasion required, with great benefit. But one day, when she was engaged to a dinner party, at some distance, she was attacked with her usual headache a few hours before the time of going out. She hoped to be enabled, by the use of the pills, to keep her engagement. Not finding so much relief us usual, she took a second pill, and was much better; but just before stepping into her carriage she determined to make quite sure of a pleasant evening, and therefore swallowed a third pill. Before she could arrive at her friend's house, she was taken frightfully ill; the carriage was stopped at a cottage by the road-side, and for many hours she was in great danger, with all the symptoms of aconite poisoning.

I usually direct a certain dose of Fleming's tincture (from one to two minims), to be repeated after two or three hours if needful; or one-eighth or one-sixth of Morson's alcoholic extract. In some cases the effect is marvellous. The instances, however, in which I have seen most good result from aconite have been those in which there has been a more chronic species of pain—a constant soreness or disposition to ache. In these a small dose administered thrice daily has been found very salutary, whether combined with tonics or taken singly.

In these cases again, I have known very great comfort ensue from the use at bedtime of a combination of salines, nervines, and ether. Thus, in one of my patients, whose brain seems to be always on the verge of aching, such a mixture is always at hand, and rarely fails to avert a threatened fit of pain, though it would be inadequate to the suppression of it when fully formed. Chloroform inhaled will relieve or remove a headache; but its effect is too transient to be of much avail. I have given it by the stomach in its pure form, or as it exists in chloric ether, and sometimes with immediate dissipation of the pain; but the direct anodyne operation is uncertain, and I have sometimes doubted whether the good effects might not be due quite as much to the rubefacient action on the mucous membrane of the stomach, as to the narcotic influence on the sensorium.

The external use of anodynes might be oftener appealed to than it is. When discussing sympathy in relation to the production of pain, I adverted briefly to impressions of temperature on the scalp, and indirectly to anodyne applications, and I expressed a strong opinion that the media of communication are the vascular nerves. I know not in what other way to explain the relief afforded to an aching brain by the application of a pad, soaked in a mixture of warm water and laudanum, to the forehead and temples. This measure is preferable to the employment of stimulating liniments, which, besides the inconvenience attending their use, may do harm by exciting the capillary circulation of the scalp, and by sympathy that of the interior.

In some cases great alleviation is derived from the use of sinapisms, or other rubefacients applied to the spine; but it will be generally found when this is the case, that a certain amount of vascular disorder is added to the nervous pain, either as an effect of this, or as the concomitant result of a common cause. But when the pain is more purely nervous, and occurs in a person of high neurotic sensibility, the irritation of the cutaneous nerves may add to the distress instead of lessening it.

But in addition to the decided narcotics, we have a useful class of agents, conveniently grouped under the term nervines. Thus, there are, in the first place, the dietetic nervines, tea and coffee, which are invaluable in the minor degrees of nervous headache, especially when it has been the result of fatigue, either mental or bodily. There is, however, some danger in their use, for they not only dispel the pain in question, but they also recruit the nervous power in the brain so thoroughly as to tempt the patient to return too quickly to the very exertions which have done the mischief. But I am not acquainted with any agents which equal these substances in the power of removing the headache without leaving incon-

remote results. And as their physiological operation is so purely cerebral, restoring the intellectual faculties and ministering to the sensation of personal well-being, as well as lessening any sad emotions, we have here an additional presumption, were any required, that this headache is seated in the nerves which are immediately related with the molecular action of the brain.

The medicinal nervines are also of use, and chiefly valerian, camphor, castor, and the fetid gums. Of these valerian is at once the most efficient, and the most easily taken, whether as an infusion or in the form of volatile tincture. But these substances are less beneficial as remedies for an attack of pain than as correctives of the neurotic sensibility which gives rise to them.

This latter treatment may be said to be prophylactic to the attacks, and curative of the diathesis, and it is of far greater importance than that which merely contemplates the removal of the present pain. It is superfluous for me to write of the methods of correcting this diathesis by air, diet, and exercise, or by removing those faults in the digestive organs, or in the uterine system, which have induced it. Nor shall I discuss all the various tonic and other medicines conducive to this end which have been recommended. I shall confine myself to those of which I have had most experience, and which have best prospered in my hands.

There are two which stand far in advance of the rest—quinine and arsenic. Iron will do much when there is an obvious deficiency of the red corpuscles of the blood, in conjunction with the diathesis in question, but its value is not so specific as that of the remedies which I have named.

The *modus operandi* of Quinine in the cure of ague and of nervous pain, is not without mystery. Were it only a remedy for the cure of that remarkable series of phenomena comprehended under the name "intermittent fever," a comparatively simple hypothesis might present an adequate key. One might begin with presuming that the malarious poison in the blood induces a certain change in the fluid, analogous to the process of fermentation, and that after the eliminative action of the skin, the blood returns to its former condition, with retention of enough of the poison for producing in a definite period a like process, the very poison being, in all probability, capable of multiplication in the blood; for were it not so, how could the disease remain for months after removal from the malarious source? Admitting such a theory of the disease, it would not be difficult to append to it the hypothesis that quinine destroys the poison, or prevents it from developing that change in the composition of the blood which eventuates in periodical fever. But quinine is as certain a remedy to the neuralgia which follows a catarrhal attack, or that which is the consequence to a slight blow on the head; cases in which there is no reason for presuming a chemical vitiation of the blood. If the former hypothesis would fit the facts or the philosophy of ague, it will not account for the cure of neuralgia.

The operation of this substance, indeed, is so unequivocally exerted on the functions of nervous substance, and with no direct proof of its affecting the composition of the blood, that one would be rather tempted to frame an hypothesis which should bring the cure of ague within the scope of a neurotic process.

In an admirably reasoned argument by Mr. Paget, in a lecture on the rhythmical action of the heart, strong grounds were offered by that eminent physiologist for the belief that rhythmical actions depend on processes of molecular growth, occupying definite periods of time. If this be true of physiological phenomena, is it not likely to be applicable to pathology? In those neurotic affections of periodical recurrence, neuralgia, asthma, epilepsy, &c., may it not be that a portion of the nervous substance in some central part suffers an error of growth, which occupies a certain period, perturbs the natural function of the part for a certain time, and ceases, till a new growth has been developed, and runs its course in like manner. I have a patient who every day is the subject of the following attack, and has been so for the last eleven years, without one day's intermission. At 4 p.m. she is seized with clonic spasms of the left arm and on the left side of the neck, which last for three hours, and then subside. No mental impression, no opiates, no tonics, no baths, no diet, no change of air, no galvanic currents, no chloroform inhalation, nor whatever the wit of any doctor has hitherto devised, has succeeded in preventing the attack. Once by chloroform inhalation I succeeded in cutting short the paroxysm; but the remedy was worse than the disease. The only

remedy which has lessened the violence and duration of the fits is quinine in large doses taken every day. Great hopes were built on arsenic; but the mucous membranes were intolerant of this agent.

Now the periodicity of such an attack is perhaps no greater a mystery than the periodical evolution of nerve-force in the nerves of the heart, if we presume the growth in an abnormal form of a portion of the nervous centre related with the motor nerves in the subject of this singular excitement. Tendency to recurrence of like action is a well-marked attribute of nervous substance, and implies the ready establishment of new forms of growth and action; and it lies at the root of habit in sensation, motion, and thought. Whether in health or in disease, new changes of life and action in the nervous system easily become permanent. Were it not so, what would become of progress and education?—A morbid habit is the continuation of a casual abnormal action. A strong impression is made on the nerves of the heart, and the rhythm of the pulsations is changed: from that time the change may continue. The nervous structure retains its new mode of growth and action: it is an excess of that tendency which belongs to nervous substance in general. An infinitesimal molecule of brain undergoes a change in the production of a thought; and from that time forth, so long as its life endures—in other words, as long as memory is intact—the molecule grows in the same form, undergoing an everlasting series of births and deaths, but maintaining its identity by its perfect similarity of reproduction. And so, as I have said, a new phase of being and action may be impressed on a portion of the nerve centres connected with sensation and motion, and may become permanent. When this occurs easily—when new modes of action are more easily impressed on some than on other individuals, such persons have a neurotic diathesis, a liability to nervous disorder.

A morbid habit is the perpetuation of what should be a temporary state and action; and it argues a diseased tendency to assume so readily a new condition.

A medicine which breaks the habit may be a substance that nips the new growth, compelling the part to return to its former development. It is like a new element introduced into a soil, destructive of particular organisms. Such may be the operation of quinine, arsenic, zinc, copper, and the vegetable nervines.

I am not so ambitious as to endeavour to construct a new theory of intermittent fever, but I strongly surmise that in the progress of discovery there will be another reaction from the modern excess of humoralism towards a modified and improved neurological pathology, and that new forms of molecular growth in nervous tissues, evolving abnormalities of nerve-force, or new forms of nutrition in secretory tissues, will be discovered, deriving, perhaps, their pabulum from altered blood, but which altered blood will be only one of the series of changes.

Allowing, however, that intermittent fever consists mainly in toxæmia, it is not difficult to understand how in the districts where the poison is rife, there have been noticed in different seasons alternations of that disorder with purely neurotic affections. What, after all, is blood disease? Is it a mere chemical change, such as is effected in an inorganic fluid by the introduction of a new element? Chemical change there may be, but there must be far more of change in the growth and life of those organic cells which form so large a part of the fluid. A poison which may at one time act on sanguineous cells, and interfere with or modify elimination, so as to produce the phenomena of fever, may at another time have a modification which affects vesicular neurine, and occasion neuralgia and strange spasms. Those who are familiar with the history of epidemics must be well aware how interchangeable are fevers and nervous diseases. Wild maniacal dances have followed close upon black pestilences, neuralgia upon agues, &c.

Whether tonic medicines, which act chemically, are restorative or catalytic, it is probable they must enter into and take part in the cell-life, whether of the blood or the tissues.

Modern researches, especially those of M. Briquet, into the physiological operation of quinine, go to prove that its special influence is exerted on the nervous system, and that in large doses it depresses rather than excites the principal functions of that system. It is therefore conceivable that if a new form of life has been produced in that system by the operation of a malarious poison, or by any other cause, such an agent as quinine may alter and destroy it. At a certain hour in the day certain nerves begin to ache, and the pain continues for several hours,

and then subsides. There must be either in the periphery or in the central termination of those nerves, some new development of nerve-life. Large doses of quinine are swallowed, and the pain appears with diminished force, and in time departs.

Without pursuing any further speculation on the modus operandi of these medicines, which are at once tonic, anti-periodic, and anti-neuralgic, I now proceed to observe that quinine appears to me to be of all remedies that which is most extensively and constantly serviceable in headaches, whether strictly nervous or neuralgic. It at one time helps to remove that irritable condition of the nerves, which makes them take offence at anything unusual in the degree or kind of cerebral action, or at what is occurring in distant organs, and at another time it proves subversive of that very condition of nerves in which the paroxysm of pain consists. It would be less frequently productive of disappointment were it given more liberally and more unflinchingly. Small doses will not avail. And we must be prepared to set aside, or to pacify, the fears of our patients, who from the peculiar sensations in the auditory nerves are beset with phantoms of plethora and apoplexy.

If the case has been of recent origin, three grains of quinine thrice daily will usually be a sufficient dose. But if it has been of long standing we must double this quantity, and in some instances ten grain doses must be administered thrice in the day.

Many substances may be advantageously combined with the quinine in order to render it more agreeable to the stomach, especially sedatives, such as extract of hemlock and of hops. I generally administer it in the form of pills, as being more convenient, and less disturbing to the stomach. When the liquid form is used we may add hydrocyanic acid if needful.

Other combined substances may be auxiliary to the specific influence of the quinine, as in the well known formula of quinine, compound galbanum pill, and hemlock.

Every one is familiar with that peculiar affection of the hearing which is complained of by those who take quinine in large doses. It is often, as I have hinted, so troublesome as to deter the patient from persevering with the remedy, especially when, as is common with those who suffer headache, there is an impression on the mind that the vessels of the head are disposed to fulness. It may be a reason for moderating, but not for withdrawing, the remedy.

We have seen, when considering the probable seat of the pain in headache, that the ganglionic nerves which accompany the blood-vessels, and are distributed over the membranes and the substance of the encephalon, are the nerves affected. Now if one thing be more distinctly proved by the operation than any other, as to the action of quinine, it is that this substance lowers the frequency of the heart's pulsations. This must be effected through the nerves which determine the rate and rhythm of those pulsations, and which are ganglionic. There is here therefore an analogical reason for expecting that quinine may exert a special influence on those nerves which accompany the cerebral vessels.

Next in importance to quinine, as a remedy for headache, comes Arsenic. It is not surprising in endeavouring to account for its medicinal action, whether as a remedy for ague or neuralgia, we should think of its poisonous power, and therefore presume it to be catalytic, or destructive to some materies morbi. Whether its action is so purely catalytic, or whether it consists in disturbing and overcoming abnormal forms of growth in the tissues, is difficult to determine. But while we know that in the normal state of the body it produces only too appreciable effects on the mucous membranes, the skin, and the nervous system, we need not look further for the wonderful control which it exercises over diseases of the skin, and over obstinate neuralgic affections. The very extent of its power is an inconvenience in the employment of this substance.

The form of headache in which I have found it most efficacious, has been not so much that which springs from an excessive irritability of the cerebral nerves, as that which comes in distinct paroxysms and at regular intervals. These are cases in which, after the termination of a paroxysm, the nervous matter grows gradually again into that form whi[illegible] in a paroxysm. This growth is destroyed by the arsenic. If the h[illegible] toxic agent be preferred, an agent requiring

a certain time for its elaboration, and then for its destruction in the paroxysm which it has induced, we may say that the arsenic has in some way prevented the formation of the agent, perhaps by a quasi-chemical process.

In the administration of this medicine I have preferred small doses—three or four minims, largely diluted, taken thrice daily, and continued for periods of time varying from two to four months.

A long interval separates the degree of value possessed by these two remedies for headache, from that which belongs to any other agents. Still there are other remedies not without importance, to which we may be driven by the idiosyncracies of our patients. According to my own experience, the first in this class is Zinc. The oxide and the sulphate have to be given for a long time before they produce any decided effect, but the patience of the physician and of the sufferer will generally be rewarded, especially if a steady and well-graduated augmentation of the dose be enforced, as the stomach becomes more tolerant of it. To eke out the time, to gain temporary advantages satisfactory to the feelings, and confirmatory to the confidence of the patients, until the more permanent good has been effected, it is well to combine the zinc with some neurotic cordial. Camphor avails in one, galbanum or castor in another, or musk, or sumbul, and the rest of these singular nervines. But none of these combinations can compete in convenience and efficacy with that invaluable salt, the valerianate of zinc. Many years before this substance was introduced, I had been in the habit of prescribing a well-known combination of oxide of zinc, extract of valerian, and extract of hyoscyamus, with a degree of benefit which had often far exceeded my expectations. And I remember the eager interest with which I first observed in one of the foreign journals the announcement of this new combination of zinc and valerianic acid. If I may venture on such a remark, I should say that, judging from the prescriptions which I have met with, this medicine is usually given in doses far too small. My own knowledge of the larger doses was in the first instance accidental. For a lady, suffering a singular laryngeal spasm after influenza, I had prescribed a grain of valerianate of zinc in a powder (as she was unable to swallow a pill), to be taken every three hours. Six grains had been directed to be distributed into six powders, but the dispenser had sent six powders, each containing six grains. In the morning I found that the powders had been taken with marvellous benefit, and no distress to the stomach. I need not say that this accidental lesson was not lost upon me, and that I have since prescribed the medicine in bolder doses than previously.

Iron may perhaps be classed next to zinc in value. Some practitioners would place it higher. When neurotic susceptibility is conjoined with poverty of colouring matter in the blood, its value can scarcely be over-praised. But even without this conjunction there are cases in which ferruginous preparations have great efficacy; but we are oftener checked by the use of this metal when we administer it in other diseases, by complaints of the pain or distress which it excites in the head, than by any other symptoms attendant upon its use. Still every practitioner must have remarked its signal utility in cases of headache with great debility, especially when the constitution has been worn down by previous disease. The carbonate has been used more frequently than any other form for the cure of strictly neuralgic headache. It is difficult to find a reason for the preference which many have given to this preparation, unless it be, that as it is very partially soluble, and is therefore given in large doses, it enters the system in very minute quantities at a time. Perhaps, as it is applied to so extensive a surface in the gradual travel of its large quantity through the tube, more may eventually enter the blood than when a small dose of a more soluble salt has been taken.

Of copper I have very little experience as a remedy for cephalalgia. I have used it in the form of ammoniuret, as in epilepsy, but with no very decided results. Were I pressed for a new agent, or a new combination in some very refractory case, I should try small doses of the sulphate of copper, in combination with quinine, as in Sir Henry Halford's favourite combination for epilepsy.

Nickel was first brought before the notice of the profession by Dr. Simpson. He one day introduced me to a gentleman who had been a sufferer in an unusual degree, and for a long time from headache, and in whom sulphate of nickel had been of more avail than other remedies, but I did not learn what those other

remedies had been. I have since then employed it in several cases, and I think always with some benefit; the dose has been a grain thrice daily.

It is highly probable that all the metals have more or less control over those new forms of neurotic life in which nervous diseases consist, and we may yet add some shafts to our quiver, tipped with selenium, cerium, and cadmium, to which Dr. Simpson has directed the attention of the profession.

When speaking of quinine, I ought to have remarked that beeberine, in large doses, has seemed to me to act in a manner very similar to that of quinine.—*Med. Times and Gazette, May* 8, 1858, *p.* 473.

180.—ON THE PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS OF ARSENIC.

By Dr. James Begbie, Vice-President of the Royal College of Physicians of Edin., Physician in Ordinary to the Queen in Scotland.

[Arsenic is a powerful alterative. The lameness and deformities of chronic rheumatism, the nodosities of joints, gradually relax and disappear under a well-conducted course of arsenic, aided probably by the addition of iodine, quinine, or cod-liver oil.]

Speaking of the use of arsenic in chronic rheumatism, Dr. Christison says, "I have known several cases of this nodosity of the joints, as some authors term it, get well under the continuous administration of arsenic for some weeks; and it appeared to me that the commencement of the cure concurred with the first development of the physiological effects." "Arsenic (says Dr. Fuller, one of the latest writers on rheumatism,") judiciously administered, and carefully watched in its effects, is one of the most valuable remedies in the chronic forms of rheumatism."

Many years ago, an industrious workman approaching the decline of life, applied to me for the relief or cure of the crippling and painful swellings of the small joints of his hands, and particularly of his feet, under which he had long laboured, and by which he had been rendered utterly unfit to pursue his usual avocations. The pains became aggravated at night, and under vicissitudes of temperature, and the patient was sensitively alive to changes of weather. It was with great difficulty and considerable suffering that he had been able to hobble to my door. When I speak of his case as one of chronic rheumatism, I sufficiently describe it. Under remedies external and internal, orthodox and empirical, he had derived no benefit; and seemed almost hopeless of relief. He was ordered to take five drops of the liquor arsenicalis after each meal, and to add one drop every third day till the eyelids became affected. He faithfully followed the prescription for many weeks, and underwent the trifling disorder which characterizes the operation of the drug. He continued his attendance for several months. The knobbiness, and stiffness, and pain of his joints gradually subsided and disappeared; he walked repeatedly to my house, a distance of a mile and a half, with ease and comfort; he improved in general health; at last he ceased his attendance, he returned to his workshop, and I saw no more of him.

A married lady, in the prime of life, the mother of several children, the descendant of gouty ancestors, and a sufferer in early years from painful and disordered menstruation, consulted me last autumn, for symptoms corresponding in some measure with those exhibited by this workman. She was very lame from the stiffness, swelling, and deformities of her toes and ankle-joints, and quite incapable of holding a needle, or directing a pen, from the painful nodosities of her fingers and hands, the distorted appearance of which presented a remarkable uniformity on both sides of the body,—symmetrical, in obedience to the law of blood diseases, as noticed by Dr. Budd. She had feverish, restless nights; a worn-out, emaciated look; a tendency to hectic paroxysms; a depraved appetite; a [illegible]d tongue; along with copious lithates in the urine, and considerable de[illegible]ent of the biliary secretions. These symptoms had supervened on a mis[illegible]she had suffered in the spring, followed by a protracted and anxious [illegible] on a near relative during a dangerous illness. The severity of the

attack had, in a great measure, subsided before she came under my care. She had been judiciously treated in the North of England, where she usually resided: colchicum, iodine, and various other remedies had been employed; but her disorder went on. After it had been corrected to some extent by depurants and laxatives, without any relief to the local disease, she was ordered to take the liquor arsenicalis in the usual dose, and with the usual instructions. She continued two months under my care; the medicine was taken regularly during that time; no well marked physiological effects ensued; but a gradual improvement in the condition of the feet and hands took place; she was able to walk with comparative comfort, and to handle her knife and fork with ease. Her general health had improved, the secretions of the kidney and liver had assumed a normal character; she added to her usual remedy the free use of lemon juice, and an occasional warm bath. She left Edinburgh, with instructions to continue the arsenic, and begin the use of cod-liver oil. I learned, in the course of a month, that she had made progress towards ultimate cure; that the pains, and swellings, and stiffness were gradually subsiding; that a fulness of the eyelids had been observed, along with a dryness of the mouth and tongue; that she had intermitted the use of the arsenic for ten days, in consequence of these symptoms concurring with uneasiness and slight pain in the stomach; but that she had failed to witness any of the other phenomena for which she had been directed to watch. I subsequently learned, that with the exception of the short interval referred to, she had persistently taken the arsenic for three months, without any other unpleasant consequences than those alluded to, and had, on the contrary, during the time it was suspended, experienced some increase of the pain, and stiffness of the small joints, which had, however, given way on her resuming the medicine. She was directed to continue the use of the mineral in diminished doses, and to adhere to that of the cod-liver oil. The last accounts bear that she is greatly improved in health, and able to walk with ease to a considerable distance.

The case of the lady differs in some respects from that of the workman. His presented the true characters of chronic rheumatism; hers manifested those of rheumatic gout, as it is called, a painful and obstinate affection to which females suffering from uterine disorder are peculiarly liable. It will be remarked, that in the former case the mineral acted quickly and successfully; in the latter its effects, both physiological and curative, were slowly and imperfectly developed. The cases together, bear witness to the correct observation of Dr. Bardsley, and the earlier exhibitors of arsenic in chronic rheumatism—that while in the one form of disease the medicine will be found to cure without assistance, in the other form it will be necessary to call in the aid of other remedies. Still, in the language of Dr. Fuller, it will be found a "faithful ally."

Closely allied to rheumatism, we might expect that neuralgia in some of its forms would be found to yield to arsenic; accordingly we have the high authority of Romberg in its favour. Speaking of the remedies for neuralgia, he says, "The united testimony of various observers agrees in according to arsenic the chief place among metallic preparations; but it will not do to rest contented with such timid doses as might be worthy of a homœopathic quack. It must be exhibited in increasing doses, from three to ten drops of Fowler's solution, two or three times daily; it should be persevered in until the toxic effects show themselves, in sickness, a sense of fainting, formication in the toes and fingers, dryness of the fauces, and white tongue; then a pause should be allowed, and the solution be resumed as soon as those symptoms have subsided."

Among the various remedies employed for the cure of chorea, arsenic holds the foremost place. On a former occasion, I detailed the history of several cases in which its admiration was speedily attended by complete relief to all the symptoms. I now beg to subjoin the following:—

On the 6th of May, 1856, I was requested by Dr. Finlay to visit, along with him, a boy of the age of sixteen, who had, for the ten previous days, been labouring under chorea in a very aggravated form. The boy was the son of healthy parents, and one of a family of ten, among whom no particular form of disease had manifested itself. He himself, at the age of fourteen, had suffered from a rheumatic attack, of three weeks' duration; but, during the period intervening,

had enjoyed perfect health. When seen, on the tenth day of his illness, he was in bed, unable to rest in any posture—the muscles of the trunk and extremities being affected by constant and violent jactitations; those of the neck, head, and face participating in the general spasmodic movements. The limbs were sometimes so violently convulsed, and the writhings and agitations of the body so strong, as to render it necessary to impose the whole weight of a grown-up person in order to retain him in bed. He was unable to articulate, except in monosyllables, emitted with a forcible sound, and in an unnatural manner. He was unable to swallow, except to a limited extent, generally losing by the choreic movements, a large portion of his food and drink. In the attempts to take food, the jaws frequently closed on the spoon or vessel offered to him, and the glass or earthenware were fractured at times between his teeth. The general choreic movements were incessant, except during sleep, when perfect stillness of the muscles prevailed; but this was of short duration, according to his mother's account, never longer than half an hour at a time, when the agitations were resumed with their wonted force, along with the peculiar gesticulations and grimaces which characterize the disease. On one occasion, it was remarked that there was a temporary lull to these involuntary muscular movements, from a cause acting powerfully on the mind: the patient, in attempting to drink from a wine-glass offered to him, convulsively seized the vessel between his teeth, broke it, wounding his tongue, from which blood flowed freely, the sight of which alarmed him, calming his agitated frame, and placing his muscles for a time under the government of the will. The mind was throughout the illness undisturbed, and the natural functions were duly performed. No remission of the symptoms had attended the remedies hitherto prescribed. He was ordered the arsenical solution, in the usual dose of five drops, thrice a day, which he continued under the observation of Dr. Finlay. On seeing him again together on the 17th—ten days after our last visit—there was a marked remission in all the choreic contortions. The eyeball was suffused, and the tongue, which was still suddenly thrust out, and as suddenly drawn back, was swollen and whitened. He was ordered to continue the drops. On the 28th he was nearly well; all the symptoms having gradually abated in the interval. He was able to maintain himself in a state of rest, to articulate plainly without grimaces, and to swallow without snapping. The arsenic had been followed by a full development of its physiological effects, to which was added a copious crop of boils. He was permitted to discontinue the medicine at the end of three weeks from the time of its commencement, when every symptom of his malady had disappeared. Dr. Finlay informs me that a slight attack of the same character, occurring about a twelvemonth afterwards, was speedily arrested by a return to the same mode of treatment. The case illustrates the remark made in a former paper, in regard to the value of arsenic as a remedy in chorea, and, along with others, still enables me to say that in this disease I have never seen it fail.

A girl of eleven years, whose case is recorded by Romberg, had been affected for eight years with intense chorea, especially of the right half of the body. All remedies applied for a series of years had proved ineffectual. On the 22nd Nov., 1842, Fowler's solution was ordered for the first time, but was omitted again for a time, when after a week, slight toxic symptoms were manifested. It was then again given in increasing doses; a marked improvement was manifested at the end of Jan. 1843, and in March the patient had entirely recovered from the chorea of eight years' duration; she continued free from it, as she assured Romberg, on applying for relief in 1849, for a paralytic affection of the face caused by rheumatism. In another patient, a girl of ten years, the chorea had continued for two years. Purgatives, preparations of iron, and cold affusion had been employed in vain by other medical men. Fowler's solution was ordered on the 29th Jan., 1844; on the 19th Feb., the symptoms presented a marked abatement, and on the 5th of May the patient was discharged cured. I am tempted to give just one other of Romberg's cures. In the spring of 1850 he was called to a case of chorea of extreme intensity, which had lasted six months. The patient, a girl of eight [illegible] a previous attack of articular rheumatism, had for half a year been [illegible]horea to such an extent that she could neither walk nor stand, nor [illegible]ly; when awake her violent movements rendered it necessary for [illegible] to hold her: and she was much emaciated. All the remedies tried

had failed. The use of Fowler's solution, continued for eight weeks, and taken in doses of four drops three times a day, established the cure.

[The influence of arsenic over the chronic and non-contagious forms of various kinds of skin diseases is well known.]

Some years ago a young lady, apparently in perfect health, judging from the freshness and bloom of her complexion, consulted me regarding a cutaneous eruption, having the well marked characters of psoriasis, with intervening patches having more those of lepra vulgaris. It had lasted many months, resisting many applications; and was distributed in numerous patches over the trunk of the body as well as over the extremities. It was the source more of irritation and annoyance than of pain. She had suffered from dysmenorrhœa and general uterine disorder, but was otherwise in good health. Her family had manifested a predisposition to rheumatic ailments. After a few doses of saline aperients and depurants, the liquor arsenicalis was administered in doses of five drops three times a day, immediately after food, and the skin ordered to be bathed once or twice a day with vinegar diluted largely with warm water. On her next visit, at the end of a week, the arsenical action was faintly developed, but the scaly patches had undergone no change. She was ordered to persevere in the use of the drops. At the end of the second week, the eyelids and tongue presented the distinctive characters of the operation of arsenic. The eruption was checked in its progress, and in one or two patches the separation of the scales had disclosed a healthy surface. She was enjoined to continue the use of the drops. In the course of another week the disease was shorn of its strength, and the medicine was intermitted, with instructions to resume its use in the event of any reappearance of the eruption. Before many months were over it had regained its place, but again yielded and disappeared under the influence of the arsenic. This alternation was repeated again and again, till tired and disappointed the patient transferred her confidence to another physician; and on meeting her many months afterwards, I learned that her malady had entirely disappeared under the influence of tar. Subsequent observation has led me to see the error committed in this instance by withdrawing the remedy too early, in place of persisting in its use for some time after every vestige of the disease had disappeared. How far the tar, to which the cure was attributed, was assisted by the previous exhibition of arsenic, I can only conjecture. We know, however, that from the days of Cullen, tar has been deservedly a favourite remedy in the chronic cutaneous eruptions. I saw lately a young lady under the care of Dr. Simpson, who had long suffered from lepra, and had been for nearly a year under treatment by arsenic. She was then recovering under the use of tar, which Dr. Simpson had prescribed in consequence of understanding that arsenic had failed to effect a cure. To what extent or in what manner the mineral had been employed, I was unable to learn. The patient, in obtaining the cure of her leprous disorder, secured also relief from uterine derangement, under which she had long laboured.

A young lady, in her twentieth year, applied to me for relief of a skin affection, which assumed the form of psoriasis, in patches scattered over the limbs. The complaint had existed during several months, accompanied by considerable irritation; but from unwillingness to disclose a disorder looked upon as loathsome, she had not been subjected to any treatment which gave promise of removing it. The invasion of the temples and forehead at length compelled her to seek advice. She was in excellent health, apparently, and no constitutional derangement was acknowledged. Her family were rheumatic. I had recently attended her brother, while labouring under a severe attack of pleurisy. A saline aperient was prescribed daily, together with the liquor arsenicalis, in five drop doses, after meals. In three or four days, the eyelids and face became suffused and swollen, the skin dry and febrile, and the tongue covered with a fine silvery film. Considerable alarm was created by these manifestations, and much unwillingness expressed in regard to the continuance of the treatment. The drops were discontinued for a time, and resumed in smaller doses; the eruption having undergone only a partial improvement. The effects of the arsenic were kept up in a modified form; the disease was arrested, and ultimately disappeared in the course of a few weeks.

In this case the arsenical action was speedily demonstrated, and in a degree somewhat more severe than usual. The practice of diminishing the dose, and persevering in a reduced form, was attended by the best results.

It is worthy of remark that, in treating skin diseases with arsenic, on the development of the first signs of physiological operation, there is not unfrequently an aggravation of the eruption for a short time. This circumstance should not deter, but, on the contrary, encourage us persistently to maintain its use.

Differing widely, apparently, in their nature, yet frequently and intimately associated together, are the chronic affections of the skin, with some of the most obstinate and intractable disorders of the uterus, and over them conjunctly or separately, arsenic exercises a powerful control. In the twenty-first volume of the 'Medico-Chirurgical Transactions,' we are told that Dr. Locock cured a lady of menorrhagia by arsenic, having recommended it to her for a disorder of the nose, being ignorant at the time that she was subject to the former disorder, she having neglected to mention it, considering it quite irremediable, as it had baffled the skill of every physician she had hitherto consulted. In the same volume, we learn that Eliza Fox consulted Mr. Hunt, in 1836, for a leprous eruption on the knees and elbows, for which he prescribed three drops of the liquor arsenicalis three times a-day. At the end of three months her mother called upon him to thank him for not only curing her daughter of the eruption, but for making her regular, then mentioning, for the first time, that previously to taking the medicine her daughter had menstruated much too frequently and profusely, which had gradually abated since she had commenced taking the drops, and that she was then quite well.

In this manner, it appears, arsenic was introduced as a remedy in uterine disorders. Dr. Hunt, it is true, had previously prescribed it in a case of cancer of the womb, and had been forcibly struck with the fact, that the pain in the diseased part was relieved as soon as the medicine affected the system; and recollecting that inflammation of the genitals occasionally follows the administration of arsenic as a poison, he was led to hope that it might be useful in some disorders of these parts. Accordingly, he prescribed it in a great variety of uterine affections, and published the results of his experience of its use in menorrhagia, dysmenorrhœa, leucorrhœa, and other disorders, in which he has recorded many interesting cases of successful treatment. Sir Charles Locock confirms the value of the remedy; and states, that he has employed it with great success, in certain forms of menorrhagia, and in many other uterine affections.

Dr. Simpson informs me that he has used it extensively and successfully in amenorrhœa and other disorders of the uterus, where iron appeared to be contra-indicated; as well as in that peculiar affection of the bowels which he has described as prevalent among females, and characterized by copious discharge of membranous shreds, and accompanied by great emaciation, and a long train of neuralgic and other nervous symptoms. This pellicular affection of the mucous membrane of the bowels occasionally co-exists with dysmenorrhœa or other uterine disorder, the membranous shreds being discharged from the bowels and the uterus at the same time, and is found to yield to the same treatment as that adopted in chronic cutaneous eruptions. "Most reliance," Dr. Simpson tells us, "ought to be placed on small and very long-continued doses of arsenic, as two drops of Fowler's solution, or a pill containing the sixtieth of a grain of the arsenite of potass taken three or four times a-day."

Arsenic has long been successfully employed in ague, and still holds its place, competing with quinine for rank and preference. "I have been able (says M. Boudin, the late physician-general of the French troops in Algeria), in a great number of cases, and by very small doses of arsenious acid, to put an end, in a short time, to quotidian, tertian, and quartan fevers, contracted in latitudes the most various, often complicated with chronic enlargements of the abdominal viscera, which were incurable by sulphate of quinine.

Arsenic has been employed successfully in many affections of the bronchial tubes, in bronchitis, in some forms of asthma, and in hay-fever. It has been found useful in cancer and in indolent ulcers; in the former, subduing pain and arresting the progress of the disease; in the latter, securing a healthy *granulating* surface, and effecting a complete cure when other means have failed.

It has been found useful in some forms of ophthalmia. Lastly, it has been employed successfully in some forms of paralysis, and in other affections of the nervous system.—*Edinburgh Medical Journal*, *May*, 1858, *p.* 967.

181.—*Use of Chloroform in Sounding for Stone.*—It is always a mortifying occurrence to a surgeon to miss the finding of a stone in the bladder and leave the discovery to be made by some one else. We not unfrequently have cases brought under our notice in which a patient submitted to lithotomy at one hospital, gives the statement that he has been previously sounded at some other institution, and told that he had no stone. These mistakes are especially liable to occur in young subjects, and when the stone is small and light. We believe, however, that the neglect to give chloroform, and to inject the bladder before the use of the sound, is fairly chargeable with many of them, and that the profession would gain in character, and individuals often be saved much annoyance, if these precautions were never omitted. To sound a squalling, struggling child, who in all probability has emptied his bladder at the sight of the instrument, is no easy affair, and not by any means likely to afford trustworthy conclusions. On the other hand, children bear chloroform remarkably well, and we are at a loss to conceive that any inconvenience would result from its habitual employment under such circumstances.—*Medical Times and Gazette*, *May* 8, 1858, *p.* 480.

182.—MARRIAGES OF CONSANGUINITY AND THEIR RESULTS.

The fact that intermarriage among blood relations is attended with the risk of unhealthy progeny, is one which the common observation and common sense of mankind have almost universally recorded. In this country, and possibly in all countries, the rudest of the people recognise this occurrence, and point it out as one which should not exist. Yet such is the perversity of minds—such the urgency of that principle which recognises present or temporary benefits, in opposition to disadvantages in prospect which may never happen in the course of the accidental future—that the common knowledge and assent to which we have made reference are allowed to stand but for little in the way of the mischief foreshadowed. Self-interest, in one or other of its forms, predominates, and perpetuates an evil which tells not on the perpetrators, but on a race proceeding from them, having as yet no existing identity in time or matter.

Of all classes of the community, none know so well the nature of the evil now being discussed, as the medical fraternity. To the medical man the evils of intermarriage are the repeated confirmations of his daily experience. Seeking for evidence on which to make a sound diagnosis, he gathers all the information he can in reference to relationships and family ailments, and uses such information to an advantage which none but himself can comprehend. Yet, here, perversity again manifests itself in opposition to even scientific knowledge.

"Physician, heal thyself," is a proverb which has been oftener said than done. We want now, however, to see it done as well as said, and we therefore call professional attention to the subject of intermarriage, with the hope that a more perfect understanding of the importance of the question may be arrived at, and that our lecturers may see the propriety of teaching a great hygienic lesson by example as well as precept.

But little sound statistical information has as yet been collected to guide us towards correct conclusions on the matter in hand. This is from no deficiency of fact, but from deficiency of industry and definite observation. We are now, it is true, emerging from this state of inaction, and a few years will doubtless bring forth numerous labourers in the wide field of research which now lies open.

It is due to our American brethren to intimate, that in the re-opening of this engrossing topic they have taken the initiative. Our attention has been specially directed to a very able production in a late number of the 'North American Me-

dico-Chirurgical Review,' by Dr. Bemiss, of Louisville, some points of which are of singular value. Dr. Bemiss for the first time gives us statistical data as the basis of his argument.

The number of marriages of consanguinity, the histories of which were collected by Dr. Bemiss, are 34. Of this number 28 were of the third degree of the civil law, or between first cousins, and 6 were of the fourth degree, or second cousins. Of the total number of marriages, 27 were fruitful, and 7 sterile. The 27 fruitful marriages produced 191 children. In only 13 of these unions was the sex of the offspring reported, giving forty-nine males to forty-two females—a proper proportion, by the way, as regards the division of sex. Of the 28 marriages of the third degree of relationship, first cousins, 23 were fruitful, and 5 sterile. Of the 6 marriages in the fourth degree, 4 were fruitful, and 2 sterile. In both these latter instances of sterility the female was the product of a marriage of consanguinity. The relative proportion of children to the total number of marriages was 1 to 5·6. The average fecundity to each fruitful union was 7, and a slight excess. The average births to each fecund marriage in the third degree of kinship was 6·87 nearly. The average number of births in the fruitful unions of the fourth degree was 8½.

Having so far marshalled his facts, Dr. Bemiss narrates the condition of the children thus propagated.

Of the 191 children born, 58 perished in early life. In 24 of the 58 deaths, the causes are stated as follows:—Of consumption 15; of spasmodic affections, 8; of hydrocephalus, 1. Of the 134 who arrived at maturity, 46 are reported as healthy; 32 are set down as deteriorated, but without absolute indications of disease; and 9 are returned without any statement as to health or condition. The remaining 47 all possess such abnormities as render them the subjects of particular observation. These are classed as follows:—23 are scrofulous, 4 are epileptics, 2 are insane, 2 are mutes, 4 are idiots, 2 are blind, 2 are deformed, 5 are albinoes, 6 have defective vision, and 1 has chorea.

While in point of fecundity these marriages present nothing very unusual, they exhibit comparatively, as Dr. Bemiss thinks, results more than usually unfavourable to the offspring. In support of this opinion, he quotes a report on idiotcy by Dr. Howe, in which that observer has narrated the history of 17 marriages of blood-relations. These 17 marriages gave birth to 95 children, of whom 44 were idiots, 12 scrofulous and puny, 1 deaf, 1 dwarf—58 in all of low health and imperfect, and only 37 of even tolerable health.

To define still more clearly the absolute influence of the blood-tie on the condition of the offspring, Dr. Bemiss has tabulated his results in the following manner. He divides the productive marriages in his report into three classes:—1. Those where the husband and wife are relations of the fourth degree, or second cousins. 2. Those of the third degree, or first cousins. 3. Those nearer than the third degree, viz., double cousins. The table, so constructed, stands thus:—

Degrees.	No. of Marriages.	No. of Children.	Died.	Diseased.	Deteriorated.	Healthy.	Unknown.
4th degree	4	34	8	6	10	10	
3 „	19	130	37	31	17	36	9
2½ „	4	27	13	5	6	3	

The results of this table are sufficiently striking, and as far as they extend are conclusive in favour of the supposition that the mischiefs arising from marriages of consanguinity increase under certain peculiar circumstances in proportion as the ties of relationship grow closer.

We have thus in brief sketched out such data as are at present before the profes-

sion on the question of intermarriage and its results. How this all-important matter may be more fully traced out involves considerations which our space does not permit us to discuss.—*Med. Times and Gazette, May* 8, 1858, *p.* 481.

183.—ON THE THERAPEUTICAL ACTION OF THE CONSTANT GALVANIC CURRENT.

By Dr. Robert Remak, of Berlin.

After the discovery of the voltaic pile (1800), many experiments were made with a view to the application of the galvanic current, as a means of treatment in diseases of the nerves and muscles. Stimulated by the admonitions of Alexander Humboldt, Loder of Jena, and Grasiengiesser of Berlin, were amongst the first to treat various paralytic affections of the limbs and sensorial nerves in this manner (1801). The opinion at that time being, that not the continued action of the current, but the shocks produced by the interruption of the current, are the best means of exciting the normal action of the nerves and muscles. These trials could not result in success, because, as my researches have now proved, such shocks can in very few cases be advantageously employed. Thus for many years the electrical machine formed the only means of producing and applying electricity to the above-named diseased conditions; and the opinion was generally adopted by physicians, that it signified little from what source electricity for medical purposes was produced.

Although the discoveries of Becquerel and Wollaston (1820–30) supplied the means of producing a constant and equable galvanic or electric current, physicians did not avail themselves of these improvements, but preferred using the magneto-electrical and electro-magnetic machines which were constructed after the discovery of the current of induction, made about the same time as Becquerel and Wollaston's, by Oersted and Faraday. In experimenting with these instruments, the fact was overlooked that the current of induction cannot be applied to the living body without producing shocks (*i. e.* spasmodic contractions of the muscles), and that these shocks have a weakening effect. At last the chief consideration came to be, the easiest method of procuring electricity for medical purposes. So at last the magneto-electric machine (of Saxton, Stoehrer, &c.) gave place to the self-acting electro-magnetic (galvano-magnetic) machine of Faraday, which was recommended by Duchenne, of Paris, and was much approved of in France and Germany. In the work of that physician it was stated that muscles are made to contract most readily by the current of induction, if certain points on their surface are touched by the electrodes. Having been occupied for many years with physiological researches upon muscular contraction, I was not a little curious to know the nature of these mystical points; and, on directing my attention to this subject, I soon found that they corresponded with the points of entrance of the muscular nerves, and that the degree of contraction of a muscle was proportionate exactly to the number of motory nerve-fibres embraced by the current at its point of application.

I stated the result of these physiological investigations in a small pamphlet, published in 1855, and drew attention to their value in a practical point of view. It seemed to me quite obvious that, for the successful therapeutical application of electricity, a better and more extensive physiological basis was required than was afforded by this one fact; so, in continuing my researches on the subject, I was led to examine the effect of the constant galvanic current (as it is produced by the elements of Daniell, Grove, or Bunsen) on the muscles and nerves of a healthy man. The results of these further observations I noticed in an appendix to the second edition of the pamphlet last quoted, also in a note sent to the Academy of Paris. After having continued such researches, made upon my own person, and upon many healthy men, for about six months, I was induced, in July, 1856, to apply the constant current as a means of treatment of contraction of muscles, in cases of hemiplegia from cerebral apoplexy. The most important result of this application was the fact, that the continued current applied for a few minutes to

a contracted muscle had the effect of immediately relaxing it to a certain extent, and rendering it amenable to the influence of volition.

After repeating these trials upon 200 cases of different kinds of nervous diseases, I reported as the result of my further experience, that the continued application of the constant current to the nerves and muscles in rheumatism, paralysis, atrophy, neuralgic and spasmodic diseases, had in my hands proved of much greater service in a curative point of view, than any other application of electricity had hitherto done. I gave my results in a memoir which I read before the Academy of Sciences in Paris, in *séance* Sep. 22, 1856; and on the 29th of the same month I made some experiments before M. Rayer, who was representative of a commission appointed by the Academy for the purpose; and on the following day repeated them before a number of physicians and naturalists.

From that date to the present, I have spent all my time in continuing these researches, and in endeavouring to develope the methods of application of the constant current. In the Society of Medical Science of Berlin, I stated (Jan. 19, 1857) that the diseases in which the constant galvanic current is of service, are—1. Rheumatisms, acute and chronic. 2. Cerebral hemiplegias. 3. Paraplegias. 4. Atrophy of muscles. 5. Chorea. 6. Stammering. 7. Trembling of limbs. 8. Cramps of writers. And I have supported my assertions by presenting cases of these descriptions, which were either cured or improved by this mode of treatment. My subsequent publications upon the subject were directed principally to the treatment of atrophy and paralytic diseases. This was accounted for by the fact that certain physiological views, dating from the time of Volta Mariamni and Nobili, gave rise to the opinion that the continued action of the current had only a relaxing or weakening effect, and could do good only in spasmodic diseases. I have refuted this idea by showing that the continued current applied in a certain manner, is of use in many cases of paralysis in which the interrupted current of induction is even productive of harm.

One of the most curious results of my researches made during the last year is the observation, that the constant galvanic current, by dilating the blood-vessels, and by promoting absorption of exudations, can be used with good effect in certain inflammations in which the other antiphlogistic and resorbent remedies are insufficient. There is no doubt that the electrolytical power of the constant current (discovered by Nicholson and Carlisle, 1800) is a powerful means of producing these effects. I have already seen most convincing and gratifying proofs of this fact, not only in rheumatic and traumatic inflammations of joints, but also in the inflammatory states of the spinal marrow which sometimes precede atrophy of this organ (?). It may readily be supposed that the mode of applying the current must be very different in order to produce the various actions I have hitherto distinguished—viz. 1st. The catalytical (*i. e.* electrolytic and antiphlogistic); 2nd. The antiparalytic; 3rd. The antispasmodic. But for information on this subject, I am obliged for the present to refer to my various publications.

In Germany my experiments have not yet been repeated; but in France, after my visit in September, 1856, some physicians made some trials upon the subject, and, as I am now informed, these were not unattended with success. In England I do not know if anything has been done in this way, but it is the object of this short paper to direct the attention of my English colleagues to this discovery (as I dare to name the methodic application of continued galvanic currents to diseased conditions), and I would feel satisfied if I thought that the methods described by me in a work I am about to publish, would in any way assist them to the successful practice of their art.

Finally, I think it my duty to state distinctly, that all my experiments upon 700 patients have been made only with the constant galvanic current (of Daniell, Grove, and Bunsen), and that there is reason to doubt if these results could have been obtained by the use of other elements less constant.—*Med. Times and Gazette, May* 8, *p.* 479.

184.—ON THE INDUCTION OF PREMATURE LABOUR BEFORE THE SEVENTH MONTH OF PREGNANCY.

By Dr. Robert Lee, Physician to the British Lying-in-Hospital, and Obstetric Physician to St. George's Hospital.

[The safety, efficacy, and morality of the practice of inducing premature labour is still questioned by many foreign and English practitioners; upon this point the following case bears:—]

On the 27th of October, 1849, Mr. Booth, of Great Queen-street, Westminster, requested me to see Mrs. S., who had been in labour forty-eight hours, and whose pelvis was greatly distorted with malacosteon. After perforating the head, I succeeded in extracting it with the crotchet, after great exertions, continued for more than two hours. The patient recovered in the most favourable manner. Her lameness, which commenced four years before, gradually increased after this confinement. At the beginning of December, 1852, I was informed by Mr. Booth that this patient was in the fifth month of pregnancy, and I made an attempt to induce premature labour, but the os uteri was so high up and so small that the attempt to pass the probe-pointed stiletted catheter into the uterus was speedily abandoned, and it was determined to allow the pregnancy, about the existence of which even there was some doubt, to go on without interruption for another month. On the 5th January, 1853, I again saw the patient, and made a careful examination of the pelvis, which was found distorted in the highest possible degree, even more than the pelvis now placed upon the table of the society. The tuberosities of the ischia were almost in contact, and the sacrum projecting forward so as to be not more than one inch distant from the bones of the pubes. The impression made upon my mind by this examination was, that I had never before encountered in practice so formidable a case of difficulty from distortion of the bones of the pelvis. It appeared highly probable if premature labour could not be induced, that the patient would either die undelivered or be subjected to the Cæsarean operation. I found some difficulty in passing the fore and middle finger of the left hand into the vagina, but after a time succeeded, and by pressing the anterior wall forward with the middle finger I succeeded at last in touching the anterior lip with my forefinger, and guided by this passed the point of the instrument through the os and cervix uteri into the cavity, and punctured the membranes. The liquor amnii immediately began to escape, and continued flowing till the morning of Friday, the 7th January, at four o'clock, when labour pains commenced. At two the os uteri was so much dilated, that the points of two fingers could be introduced, and the fact distinctly ascertained that the presentation was preternatural. At seven p.m., the right arm was hanging out of the external parts, and the shoulder and thorax were forced down partially through the brim of the pelvis, and we were greatly pleased to find that the short diameter of the outlet was much increased by the tuberosities of the ischia having been pressed asunder. The operation of turning being considered wholly unadvisable and impracticable in this case, after carefully ascertaining the position of the fœtus, I resolved to eviscerate the fœtus, and afterwards with the crotchet fixed on the spine, as near as possible to the pelvis, to extract the nates and lower extremities. This was successfully done in a quarter of an hour, and in less than five minutes more the head was delivered without the employment of much force, and without the use of the perforator and crotchet. The patient recovered most favourably, and is still alive. The settled conviction left upon my mind by this case is, that a higher degree of distortion of the pelvis will never again be met with, and that if such a case should occur it would be possible to induce premature labour, and that it would be the duty of the practitioner to do so even before the sixth month of gestation.

Dr. Merriman was of opinion that the induction of premature labour by art "ought to be strictly confined to those melancholy cases of distorted pelvis, for which it was originally recommended," and the operation "should never," he says "be undertaken, till seven complete months of utero-gestation have elapsed:" "that the practice should never be adopted till experience has decidedly proved that the mother is incapable of bearing a full-grown fœtus alive;" and that "the

operation ought not to be performed where the patient is labouring under any dangerous disease." These rules, laid down by Dr. Merriman forty years ago, "in order to guard against any abuse of this method of practice," may now, I believe, with safety and advantage, be greatly modified and extended.

It has been proved, by the results of extensive observation, that the induction of premature labour, which I regard as the most important improvement ever introduced into the practice of midwifery, is not only efficacious in all forms and degrees of distortion of the pelvis, but in cases where ovarian, uterine, and bony tumours obstruct delivery; in cicatrices of the vagina; malignant diseases of the os and cervix uteri; in organic diseases of the heart and lungs; in dropsy of the amnion, and general dropsy; in renal and vesical diseases; in cases where the death of the fœtus in utero repeatedly occurs from morbid alterations in the structure of the placenta, and other causes; in mania during pregnancy; and especially in cases where obstinate and incurable vomiting occurs in the early months of gestation.—*Med. Times and Gazette, May* 8, 1858, *p.* 476.

185.—ON THE USE OF THE SPECULUM IN UTERINE DISEASES.

By Dr. Robert Lee, Obstetric Physician to St. George's Hospital.

[In the last volume of 'Medico-Chirurgical Transactions' Dr. Lee published the details of eighty cases in which the speculum and caustic had been employed by other practitioners, which with 220 cases previously published, make up 300. Upon the use of this instrument he remarks,—]

Of these 300 patients, 47 were unmarried, one had barely completed her eighteenth year; there were several under twenty, and the greater number under thirty years of age, and were suffering from hysteria, leucorrhœa, dysmenorrhœa, or some nervous affection of the uterus, without inflammation, ulceration, or any structural disease or displacement of the organ. In one case the patient had been informed that the womb was prolapsed and much ulcerated, and some instrument had been introduced daily for six weeks, by a physician extensively engaged in the treatment of uterine disease, and great expense incurred, with an aggravation of all the symptoms. In this case I found the hymen so perfect that it was impossible to reach the os uteri without employing an unjustifiable degree of violence. On the ground of morality, and on every other ground, the employment of the speculum in these 47 cases could admit of no defence.

Of these 300 patients 70 were barren, and the sterility was not removed, nor the hysteria, leucorrhœa, or disordered menstruation, under which the greater number were labouring, in a single instance relieved, or any benefit obtained. The injurious effects of a long course of speculum and caustic treatment upon the moral feelings and character of several of these individuals were not attempted to be concealed, the treatment being spoken of with horror and shame.

Of these 300 patinets there were a considerable number suffering from cancerous disease of the uterus, in all of which the symptoms were increased by the introduction of the speculum, and the application of caustic or the actual cautery to the ulcerated vagina, and os and cervix uteri. In one case, though the carcinomatous ulceration was in an advanced stage, and the nature of the disease obvious to the most inexperienced, after an examination with the speculum a false prognosis was given, and iron heated to a white heat in fires of coke, was for months passed through the tube, and delusive hopes of recovery held out to the last, and the pecuniary concerns of the husband involved in irretrievable ruin by the charges, medical and surgical, incurred by such unscientific, unprofessional, and unprincipled proceedings.

Neither in the living nor the dead body have I ever seen a case of simple ulceration from chronic inflammation of the os or cervix uteri, and to apply the term ulceration to states of the os uteri in which the mucous membrane, or, as it is termed by some, the basement membrane, is not destroyed by ulceration, is an abuse of language calculated only to deceive and mislead the members of the medical profession, from whom the truth has been carefully concealed. The specu-

lum emanated from the syphilitic wards of the hospitals of Paris, and it would have been better for the women of England had its use been confined to those institutions.—*Medico-Chirurgical Transactions, Vol. XL., p.* 201.

186.—ON CONSUMPTION.

By Dr. Richard Payne Cotton, Physician to the Hospital for Consumption and Diseases of the Chest.

[Amongst other causes influencing this disease, Dr. Cotton says—]

Hereditary transmission appears to have a smaller share in producing phthisis than is generally supposed. In a thousand cases, three hundred and sixty-seven, or rather more than one-third, were members of consumptive families; whilst, in the remaining six hundred and thirty-three, or in somewhat less than two-thirds, the disease could not be shown to have proceeded from hereditary causes.

It is certain, however, that this scarcely exhibits the full extent of hereditary taint, since it embraces only the preceding generation (statements referring anterior to this being too vague to be depended upon); and it is well known that phthisis, like other diseases so propagated, may remain dormant, for one, two, or even more generations, and then show itself again at a remote period, when, perhaps, its original existence in a family has been long lost sight of. The above, therefore, must be considered only as an approximation to the truth, or as exhibiting the frequency with which hereditary influence can be demonstrated.

Consumption is more likely to be acquired by males than females.

As a general rule, *hereditary* consumption is less controllable than *acquired* consumption; and those cases which prove the most rapidly fatal will be usually found to proceed from, or to be accompanied by, hereditary taint.

Inactivity is one of the most fruitful causes of delicate health; and I have seen many cases of threatened phthisis entirely recover, from nothing else than the use of regular and moderate exercise.

When hectic fever has become fully established, the patient is seldom free from diarrhœa, perspirations, or profuse expectoration, which seem to exhibit towards each other a certain degree of antagonism. In proportion to the increase of one, the others have a tendency to diminish; and as one becomes checked by treatment, another too often makes its appearance. The issue of nearly every fatal case of phthisis is immediately attributable to the exhausting effect of one or other of these three symptoms; hence it becomes a matter of practical value to ascertain their comparative influence upon the patient.

Diarrhœa is the most rapidly destructive; perspirations the next; and expectoration the least so.

[Under the subject of the preventive treatment of phthisis, the author observes, that when a parent, even although competent to the office, is yet possessed of a marked hereditary predisposition, it is better for her offspring, as well as herself, that her duties should be transferred to another.]

The diet should be *moderate*, simple, and nutritious, and consist of *a full amount of animal food.* Regular exercise should be made imperative; and, where it is possible, the residence should be fixed in some healthy district, far removed from the depressing influences of a town; whilst the cultivation of the mind should neither be commenced too early, nor be pursued too rigorously. The consequence of a disregard to these matters is often painfully exhibited in weakly children, who have been injudiciously sent to the schools of our metropolis.

[The union of iron with iodine in the form of syrupus ferri iodidi, seems peculiarly adapted to tubercular affections.]—*Consumption, its Nature, Symptoms, and Treatment, 2nd Edit. Churchill,* 1858.

187.—ON PULMONARY HEMORRHAGE.

By James Alderson, Senior Physician to St. Mary's Hospital.

The popular view of hemorrhage from the lungs refers it to the rupture of a blood-vessel; it is also the common belief that such hemorrhage is the beginning of consumption. Now it is not always the breaking of a blood-vessel, and whether it is or is not so, consumption does not always follow. It is not denied, as we shall see hereafter, that hemorrhage may take place from a ruptured or ulcerated vessel in the lungs, but this form of hæmoptysis is the exception to the general rule.

Hemorrhage from the lungs most frequently occurs by means of exudation through membranes or the coats of vessels. Exudation of blood may also result from a constitutional derangement, of which I shall presently describe an instance in one of the cases before us. There are also exceptional cases, the cause of which I shall presently refer to; but by far the greater number are to be referred to the existence of tuberculous deposit. It is not difficult to understand how the presence of tubercular matter will cause blood to be exuded from the vessels. As all the blood of the body has to pass through the lungs, for the purpose of purification, before being again transmitted to the system, it is plain that the presence of any foreign body in the lungs must offer obstruction to the free transmission of the blood, and cause delay and congestion. The greater the quantity of blood present in the lungs, the greater must be the necessity of the presence of air to purify it; and the forced accumulation of both occasions the blood to exude from the surface of the membranes and vessels. Hence we account not only for the symptom before us, but also for the dyspnœa, or difficulty of breathing. It must also be borne in mind that the structures and vessels are altogether impaired in tubercular constitutions, and therefore admit more easily of transudation.

In the later stages of pulmonary consumption, the hemorrhage results not only from exudation, but from ulceration of smaller vessels in the immediate neighbourhood of softened tubercles. In the progress of the disease this hemorrhage is small in quantity, though frequently repeated; but in advanced cases of a particular class it is profuse and generally fatal, having resulted from the ulceration of a large vessel. This lesion is still essentially different from what is termed the breaking of a blood-vessel, as for instance, in the brain or its membranes, whether as in apoplexy, or as the result of an injury.

If we now briefly review the general character of spitting of blood, we shall find that it occurs under two forms—the one severe, the other slight. In the first, several ounces of blood will be brought up at once—six or seven or more ounces at a time. In the other, only specks or streaks may be seen in the expectoration; both forms being referable to exudation from obstruction; and although it is only the larger quantity which terrifies the patient, both forms equally reveal to the physician the existence of a diseased condition of the lungs.

When profuse, the blood is usually of a florid colour, frothy from the admixture of air, and clots of dark blood will be occasionally spit up, or sometimes apparently vomited, when a sort of convulsive action of the diaphragm accompanies the expectoration of the blood. A difficulty of breathing almost universally attends it, as well as pain, which is usually referred to the sternum, though sometimes to the side affected.—*Lancet*, *April* 24, 1858, *p.* 504.

188.—ON THE TOXICAL AND MEDICINAL PROPERTIES OF NITRATE OF OXYDE OF GLYCYL.

By A. G. Field, Esq., late Demonstrator of Anatomy at St. George's Hospital Medical School.

In the evening of the 3rd of Feb., 1858, I was conversing with a practitioner, when he mentioned a medicine which possessed peculiar and extraordinary qualities, some of which he described as having affected himself, though he had taken *it in very minute* quantities. I laughed at his credulity, and offered to take as

much as he pleased, upon which he let two drops of what he called diluted solution of glonoine fall on my tongue. After swallowing this small quantity of fluid —I was assured the quantity did not exceed two drops—I asked what effects I must expect, but was told to wait and observe for myself. I then purposely conversed on other subjects. In about three minutes I experienced a sensation of fulness in both sides of the neck, to this succeeded nausea, and I said, "I shall be sick." The next sensation of which I was conscious was, as if some of the same fluid was being poured down my throat, and then succeeded a few moments of uncertainty as to where I was, during which there was a loud rushing noise in my ears, like steam passing out of a tea-kettle and a feeling of constriction around the lower part of my neck as if my coat were buttoned too tightly; my forehead was wet with perspiration, and I yawned frequently. My intellects returned, however, almost immediately. I reproached my friend for not having tested the anæsthetic power of the medicine, by inflicting a slight wound on me. I need scarcely say I am thus minute in my description of what occurred, that an accurate idea may be conveyed of the actual effect produced on me, as well as to justify the uses to which I have since put the medicine. When these sensations had passed off, which they did in a minute or so, they were succeeded by a slight headache, and dull heavy pain in the stomach, with a decided feeling of sickness, though without any apprehension that it would amount to vomiting. I lay on a sofa, feeling rather languid, but talking cheerfully, conscious at the same time that I could very well exert myself both mentally and physically, if I liked, but that it was more pleasant to be idle. This condition lasted about half an hour, at the end of which I was quite well, and walked home, a distance of half a mile, with perfect comfort. I slept soundly from one o'clock till six, when I was called up, having a slight amount of general headache, but not such as I should have regarded but for the recollection of last night's adventure.

The physician to whom I am indebted for this overdose told me, that when his first impression that I was shamming had passed off, my condition caused him the greatest alarm, for he really thought he had killed me. I learn from him that my head fell back, my jaw dropped, I was perfectly white, breathing stertorous, and no pulse at the wrist for the space of about two minutes. He immediately rushed to a closet, and procured some stimulant, which he poured down my throat. I had never been in better health and spirits than on the day of this occurrence, and had taken nothing for hours but a little cold tea.

This same dilution of glonoine consists of one drop of a peculiar chemical compound, dissolved in ninety-nine drops of rectified spirit; and glonoine itself I learn to be a nitrate of oxyde of glycyl, prepared by adding nitric and sulphuric acids to glycerine, the temperature of the fluids being kept down by a freezing mixture.

My own personal experience of the very marked and peculiar effects produced by this drug made me anxious to test its qualities still further. As a direct sedative to the nervous system without possessing any stimulating or permanently depressing qualities, without affecting secretion, together with its power of subduing muscular action, it appeared to promise to become an invaluable agent in the treatment of a large class of nervous and spasmodic diseases.

Anxious to inform myself on the effects of a smaller dose, I got a medical friend to join me. We each touched our tongue with the cork moistened with glonoine solution, and recorded the sensations produced by it. They were as nearly as possible identical—a sense of constriction of the neck, slight nausea, with fulness, and some pain in the head, as if the brain were expanding. But I think my friend must have experienced more decided effects than I did, for he declared he would never take any more. The sensations lasted about five minutes, and then passed off without leaving any unpleasant effects.

Animals, as far as my experiments have extended, appear to be almost unaffected by this drug, which acts so powerfully on the human organization.

I have repeatedly given it to cats, rabbits, and other animals in doses varying from two to thirty drops without producing any immediate effect. One rabbit had diarrhœa an hour after, and the cats appeared cold and lazy all the next day. Some smaller animals, such as mice and pigeons, died after having taken the glonoine some hours, but they appeared to have suffered from alcoholic poison-

ing rather than from any symptoms at all resembling those produced by the glonoine on the human subject.

Disappointed in my endeavours to gain any information from experiments on animals, I still thought I had seen and felt enough of the physiological action of the medicine to justify my cautiously employing it in the treatment of disease.

Case 1.—Mrs. L., aged 68, had for some days been under treatment on account of a very painful nervous affection, which she designates spasms. This recurred regularly every three hours, and is described by herself and her attendants as most distressing, and my own observation of one or two seizures fully bears out their statements. Each attack commenced suddenly with intense pain in the epigastrium, extending up to the top of the chest, and then down the inner side of the left arm; it lasted about half an hour, and then subsided, leaving her exhausted, but otherwise well in the intervals. They recurred during the night with equal regularity. She was at the same time the subject of uterine derangement. Fœtid ammonia, assafœtida, chloroform, valerian, hyoscyamus, camphor, and prussic acid, with a counter-irritation, having failed to give her relief, I had recourse to morphia every two hours, which relieved her only after several doses had been taken, and partial narcotism had been produced. She would then enjoy a few hours' peace; but the attacks always returned when the influence of the morphia had passed off.

Feb. 5th. She had slept well all night from the morphia which had been taken in the previous twenty-four hours, and was awoke in the morning of this day by one of her painful attacks; but it yielded in three minutes to a quarter of a drop of the solution of glonoine in a dessert spoonful of water. After this she had four more attacks before noon. For this she took the same medicine, and was quickly relieved; but having exhausted her supply when the fourth occurred, she suffered as much as on former occasions.

My daily notes of this case are nearly a repetition of what I have just stated, till the evening of the 10th, when she appears to have taken an over-dose, which produced effects very similar to those from which I suffered on the 3rd. This gave rise to so much alarm, that she refused to take any more. I therefore again had recourse to the morphia; but she suffered so severely the next day and night, that she begged to be supplied with the glonoine again, and no sooner had she taken it than relief was obtained. The dose has been continued every four hours, with the happiest results. Her attacks now are reduced to two or three in the twenty-four hours, and always readily yield to the quarter of a drop of solution of glonoine. The only other treatment she has required has been a few ten-drop doses of the tincture of cannabis indicus, to relieve uterine hemorrhage.

Case 2.—Mrs. W. had suffered severe pain from a decayed tooth for several hours. The pain was so great that she would gladly have had it extracted; but her dentist was anxious to preserve it. In the evening she begged me to give her something, for she said, "It cannot be made worse." I placed about half a drop of the solution of glonoine (1 per cent.) on her tongue. Soon after she experienced a pulsation in the neck, fulness in the head, throbbing in the temples, and slight nausea. The toothache subsided, and she became partially insensible, disliking very much to be roused. When fully sensible she had headache, but the toothache was gone. Mrs. W. remarked, "Certainly that medicine allays pain wonderfully." She slept unusually well that night, and experienced no ill effects in the morning.

Case 3.—Elizabeth M., a stout, healthy young woman, had severe toothache. I was applying a very small piece of lint dipped in glonoine solution (1 per cent) when it accidentally fell into her mouth and was swallowed. In about five minutes, after feeling giddy and sick with headache, she became insensible. Her countenance, naturally florid, was unaltered, breathing tranquil, pulse full, and rather quickened. Knowing, as I did, that she had taken but a small quantity of the drug, I kept my finger on her pulse, and allowed myself time carefully to observe her condition before applying a restorative. I tested her sensibility to pain, and called loudly to her, but without producing any impression. Directly I detected a slight failure in the pulse, in about three minutes after insensibility commenced, she had some stimulant poured down her throat, when she quickly

recovered. Some headache was complained of, but the toothache was cured. The next morning she was quite well.

Case 4.—Mrs. R, aged 45, pale, anæmic, with feeble circulation, has for the last month suffered from headache, daily increasing in severity. When I first saw her, Feb. 15, she had had leeches applied to the temples, and had taken drastic purgatives, since which the pain had been much worse, and she could not sleep. I gave her a quarter drop of glonoine solution in coloured water every four hours. On seeing her the next day, she expressed the greatest gratitude for the relief the medicine had afforded her, and she said her head was much better after taking the dose, and she slept four hours. The glonoine was of course given only as a palliative in this case, while iron and generous diet were relied on as a means of effecting a cure.

I have not yet met with one well-defined case of neuralgia or spasmodic disease in which this medicine has failed to afford relief. No vague, over-sanguine expectations are entertained of its power to cure disease where spasm or pain are but symptoms, excepting only in those cases where these consequences themselves become the cause of death, their cause being of a transient nature, and liable to subside if the patient's life can be maintained for a certain time, such as temporary irritation of the nervous centre, or inflammation of such a part, which might terminate in resolution or be subdued by remedies, if existence were prolonged sufficiently for their action; and also in cases where we may suppose symptoms such as spasm may react on their exciting cause, preventing the necessary tranquillity for recovery, the offspring, as it were, maintaining its parent. With such a remedy may we not look forward hopefully to the treatment of tetanus, hydrophobia, and other similar diseases?—*Med. Times and Gazette, March* 20, 1857, *p.* 291.

189.—DRS. FULLER AND HARLEY'S EXPERIMENTS WITH GLONOINE.

[In consequence of Mr. Field's statements regarding the properties of glonoine, Drs. Fuller and Harley were induced to undertake the following experiments. Dr. Fuller says—]

The glonoine which I swallowed was pure glonoine, obtained from Morson's, of Southampton-row, diluted with 10 parts of rectified spirit; whilst the glonoine which Dr. Harley took was pure glonoine, obtained from a homœopathic chemist, diluted with 6¾ parts of rectified spirit. Eight drops of this latter solution added to 92 drops of rectified spirit would form (so the homœopathic chemist stated) the solution of glonoine known to homœopathists and described by Mr. Field as glonoine of the first dilution. It would contain one drop of pure glonoine to 99 of spirit.

Our experiments commenced at 12.45 o'clock, at which time my pulse was 80, and my respirations were eighteen in a minute. I began by taking two drops of a solution containing one drop of pure glonoine in 99 of rectified spirit—the solution employed by Mr. Field. It was sweet to the taste and warm, and imparted a flavour or odour somewhat resembling chloric ether. In the course of a minute I felt, or fancied that I felt, some fulness in the head, but was not conscious of any other unusual sensation. At four minutes past one o'clock I took two drops of the solution obtained from Morson's, or in other words, one-sixth of a drop of pure glonoine, which is equal to 17 drops of the solution spoken of by Mr. Field. It was very sweet, and pungently hot to the tongue and throat, giving rise to a burning sensation which lasted several minutes. At six minutes past one my pulse had risen to 96, and I felt, or fancied that I felt, increased fulness about the head, but without giddiness or confusion of thought. My pupils were not affected, and I did not experience any unusual sensation beyond that just referred to. At 1.15 o'clock I took four more drops of Morson's solution, or in other words, one-third of a drop of pure glonoine, which is equivalent to 33¾ drops of Mr. Field's solution. At 1.18 o'clock my pulse was still 96; my respiration remained tranquil: my pupils were unaffected, and I was not conscious of any unusual sensation, except a sense of slight fulness in the head. As no further symptoms occur-

red, at 1.30 o'clock I swallowed six drops of Morson's solution, or in other words, half a drop of pure glonoine, which is equivalent to fifty drops of Mr. Field's solution. It was intensely hot to the mouth and gullet, rendering it necessary for me to swallow half a glass of water. I felt somewhat nervous: and for a few moments the surface of my body became covered with a clammy perspiration; my pulse intermitted occasionally, and I experienced, or fancied that I did so, an increase of fulness about the head; but my pupils remained unaltered, and in no other respect did I perceive any difference from the effects produced by the former and smaller doses. In a few minutes the nervousness passed off, and at 1.35 o'clock my pulse was 90 and regular. At 1.40 o'clock my pulse was 86, and my respirations were sixteen in a minute. At 1.50 o'clock my pulse had fallen to 80, or the standard at which it was found before the commencement of the experiments.

Thus within the space of one hour I took rather more than one drop of pure glonoine, which is the amount contained in eighty drops of the solution spoken of by Mr. Field. This would appear conclusive as to the fact that whether in weak solution (1 in 100) as employed by the homœopathists, or in a strong solution (1 in 6) glonoine does not produce the effects which have been ascribed to it; and that, contrary to what has been stated by Gmelin and implied by Mr. Field in his recent communication, it may be taken with impunity in considerable quantity. Whether the acceleration of the pulse which was observed in the first instance was attributable to the effect of glonoine, is a question which requires further experiments to determine. My own impression is, that it was purely the effect of the nervousness or excitement resulting from the experiments in which we were engaged, for had it been otherwise it is not probable that the pulse would have fallen to its natural standard within so short a period after taking the larger doses. The fulness in the head may have been attributable in part to the same cause, but some discomfort about the head, not amounting to headache, continued for several hours afterwards, and I cannot help thinking that it is fairly referrible to the effect of the glonoine I had taken. I will only add, that for some weeks I had been suffering from slight bronchial irritation, with frequent expectoration of thick mucus, and that since I swallowed the glonoine I have not had occasion to cough or expectorate.

[Dr. Harley says,—]

The effects so graphically described by Mr. Field are scarcely those one would expect to find produced by so small a quantity of a homœopathic drug; and I must candidly admit, that if all the infinitesimal doses are equally potent, my ideas of homœopathy require to undergo a radical change. The above-mentioned two drops of liquid were taken from a solution consisting of one drop of glonoine dissolved in ninety-nine drops of rectified spirit; consequently the alarming effects spoken of were produced by only one-fiftieth of a drop of pure glonoine. From another part of the communication of Mr. Field, it would appear that glonoine is a very powerful poison; but, on reading a little further, we find that animals "appear to be almost unaffected by this drug."

Being unacquainted with any substance whose toxical effects are entirely limited to the human organism, I was naturally anxious to repeat Mr. Field's experiments. Consequently I lost no time in procuring at a homœopathic pharmacy a bottle of glonoine, of the strength of Mr. Field's. I began by touching my tongue with the cork moistened with the solution; but experiencing no effect beyond that which usually follows the application of alcohol or ether to the tongue, I boldly put a couple of drops into my mouth. At first I felt a kind of sweet and burning sensation, and soon after a sense of fulness in the head, and slight tightness about the throat, without, however, any nausea or faintness. After waiting a minute or two, these effects went off, and I could not help thinking that they were partially due to imagination. Determined to give the thing a fair chance, I swallowed five drops more, and as these did not cause any increased uneasiness, I took, in the course of a few minutes, other ten drops of the solution. Being at the time quite alone, I became somewhat alarmed lest I should have taken an over-dose, and very soon my pulse rose *to above 100* in the minute. The fulness in the head, and constriction in the

throat, I thought was more marked than after the previous dose. In a minute or two, however, my courage returned, and the pulse soon fell to 90. The fulness in the head lasted some time, and was followed by a slight headache. Next day I repeated the experiment upon myself by taking ten-drop doses, and finding no bad effects to result from them, I tried the substance on some of my friends, without saying what sensations might be expected to arise from it; and I may cite the following as a good example of an experiment unaffected by imagination :—

To Dr. Von F., a strong, healthy gentleman, aged 26, respirations 28, and pulse 84 in the minute, I gave ten drops of the solution. After waiting five minutes without witnessing any effect, I administered to him other eighteen drops of the glonoine in a little water. In about a quarter of an hour the pulse was noticed to be slower; this, however, was, no doubt, caused by his sitting quite still. The respirations remained as before, and neither fulness in the head nor constriction in the throat was complained of. Upon the tongue of another gentleman (a medical man) who was equally ignorant of the contents of Mr. Field's communication, I allowed two drops of glonoine to fall; after waiting five minutes without any peculiar sensation being felt, I gave him eighteen drops of the solution, and in five minutes more, as there was not the slightest effect observable, I again gave him other eighteen drops. The pulse and respirations were carefully watched during a quarter of an hour longer; but as absolutely nothing was either felt or observed, my friend went home. Having been thus unsuccessful in obtaining any decided effects from the employment of glonoine procured at the homœopathic pharmacy, I obtained some of the pure substance from Mr. Morson in Southampton-row. While standing in Mr. Morson's shop, I took by degrees a drop of the perfectly pure material, and found that, on bringing it in contact with the tongue, it at first gave rise to a sweet flavour, which was rapidly fo'lowed, however, by a most disagreeable, acrid, burning sensation. The latter lasted during several minutes. Immediately after I had the drop, which was equal to 100 drops of the solution previously employed, I felt my pulse, and found it 105 per minute. I imagined, too, that I felt fulness in the head, and some tightness about the throat; but as these effects gradually passed off in the course of a few minutes, I thought that they were most probably due to fear and imagination.

On the 29th instant, I made, in concert with Dr. Fuller of St. George's Hospital, some experiments with two different solutions of glonoine. One contained one drop of glonoine dissolved in ten of spirit; the other, one drop dissolved in six and three-quarters of spirit. As Dr. Fuller will, in a separate letter, describe the effects produced upon himself by glonoine, I shall limit my remarks to a description of my own sensations. At 12·45, my pulse being 80, my respirations 22 per minute, I took the solution containing one part in six and three-quarters of spirit, a quantity equal to one-sixth of a drop of pure glonoine, which would be equal to sixteen and a half drops of the solution used by Mr. Field. At one o'clock my pulse had risen to 90, but the respirations were about the same. I felt some fulness in the head, and slight tightness about the throat. At 1·5 I took one-third of a drop (= thirty-three drops of Field's solution). In three minutes afterwards my pulse was 98. The other effects continued as before. At 1·16 I took another half-drop (= fifty drops of Field's solution), and in four minutes afterwards, my attention having been directed to another subject, my pulse had fallen to 94. At 1·30 I took a whole drop of pure glonoine (= 100 drops of Field's solution), and in six minutes afterwards my pulse had got up to 106 per minute. None of the other effects were increased. Ten minutes later, when I had become convinced that I ran no risk in thus rapidly augmenting the dose, my pulse fell to 78, while the respirations were 18 per minute. I have, therefore, no hesitation in saying, that the effect upon the heart's action was entirely due to fear. The head and neck sensations, however, I think, are too constant to be attributed to the same cause, although I have no doubt the imagination exaggerates them. During the three-quarters of an hour that this experiment lasted, I had taken altogether a quantity of glonoine equal to 199½ drops of the solution used by Mr. Field, and of which two drops were sufficient to produce in him symptoms of narcotic poisoning.

While Dr. Fuller was with me at University College, we gave in the course of fifteen minutes a quantity of an alcoholic solution of glonoine, equal to three drops

of the pure substance, to a small sickly looking rabbit. The animal was kept under observation for more than an hour without any effect being observed.

To a frog we gave at 1·20 some of the solution equal to two-thirds of a drop of pure glonoine. At 1·34 he was noticed to be in a convulsion. This experiment, however, scarcely deserves to be mentioned, as it is impossible to say whether the alcohol or the glonoine induced the tetanic state.

Through the kindness of Mr. Spencer Wells, who gave me a quantity of pure glonoine, prepared by Mr. Squire, I was enabled to perform the following experiments. To a middle-sized dog I gave fifteen drops of the undiluted substance, and in three minutes afterwards I gave him other ten drops—in all, a quantity represented by 2500 drops of the solution employed by Mr. Field, and although the animal was most carefully watched during a couple of hours, no effect was detected beyond what was produced in the mouth by the acidity of the drug.

At 11·45 I put two drops of pure glonoine into the mouth of a frog. At 12·7 he was seized with convulsions. The fore-legs were firmly clasped on his breast, and the hind-legs were stretched straight out. The slightest touch, or even blowing with the breath upon him, was found sufficient to induce a spasm. The tetanic state differed from that produced by strychnia, inasmuch as the spasms were of very short duration, almost instantaneous, and when the animal was left quiet recurred at regular intervals—eighteen in the minute. In about an hour and a half after the administration of the toxic substance, the frog was found flaccid, and nearly dead. When touched, however, slight spasm could still be induced.

To another frog I gave three drops of pure glonoine, and in twelve minutes afterwards he was found convulsed. I watched him for nearly an hour, and he presented symptoms very similar to those already described as occurring in the previous case; the only difference being that he frequently croaked, and occasionally made a sort of screaming noise. I observed that the mucous membrane of the frog's mouth was somewhat inflamed by the drug.

I may mention that the pure glonoine which Mr. Wells gave me, as well as that got at Morson's, is an oily-looking, pale yellowish coloured liquid, soluble in alcohol and ether; and when first mixed with them yields a perfume similar to that arising from mellow apples. It is insoluble in water, in which it sinks to the bottom like chloroform. It has a sweet burning taste, is very slightly volatile, and inflammable.

In conclusion, I have only to remark, that I have experimented upon ten different gentlemen, with glonoine obtained from four different sources, and that I have not seen any dangerous effects follow its employment when given in the before-mentioned doses; but if taken pure, great caution should be used.—*Med. Times and Gazette, April* 3, 1858, *p.* 356.

190.—REMARKS ON DRS. FULLER AND HARLEY'S EXPERIMENTS WITH GLONOINE.

By A. G. Field, Esq., Brighton.

[The experiments performed by Drs. Fuller and Harley seem very contradictory to those by Mr. Field. The following throws some light on the apparently incompatible testimony.]

Gmelin has stated that half a drop of pure glonoine will kill a man.

In my last paper on this subject, I stated that two drops of what the homœopathists called the first dilution of glonoine produced profound coma in me. Drs. Fuller and Harley took very much larger quantities, and produced nothing beyond a headache. Was the action of the drug less powerful in their cases from peculiarities in the subjects of the experiment, in the substance experimented with, or the conditions under which the experiments were made? Putting aside for the present the hypothesis that idiosyncracy may greatly influence the action of such an agent as glonoine, I think a very reasonable explanation may be found in the variation in strength to which glonoine is liable, at which we cannot wonder *its mode* of preparation is considered. But a far more important cause in

determining the extent of its action is to be found in the conditions under which the drug is taken.

In my own case my nervous energy had been much impaired by a hard day's work; for contrary to my usual custom I had walked to all my patients that day, and besides this, I had just finished a painful and protracted surgical operation, involving as it did a considerable expenditure of nervous force, added to which the hour had arrived when there was a natural tendency in the brain to subside into that state of unconsciousness in which one-quarter of its life is passed. I have since taken the same quantity of glonoine under different conditions, with no other result than the production of a mere headache.

Having in my experiments on myself experienced the greatest variation in the strength of different specimens of glonoine, I was disposed to think, when I read Dr. Fuller's and Dr. Harley's experiments, that they had used a less powerful agent. I therefore called on Dr. Fuller in the morning of April 3, and requested him to take the same glonoine which had affected me. He kindly acceded to my request, but to my surprise he experienced little besides the usual headache, which appears always to result from a small dose.

From Dr. Fuller's I went to a London Hospital, where I heard a patient was undergoing treatment with solution of glonoine for hemicrania; he had been taking one dose of two drops daily, but the medicine had produced no effect on him. I took two drops of his solution, and was but slightly affected by it. By permission of his physician I gave this patient two drops of my own solution. In about a minute he became pallid, felt sick and giddy, his forehead was covered with perspiration, and he sank on the bed by which he was standing almost unconscious, his pulse failing so as scarcely to be felt. I requested that he might have some stimulant, and after taking a little ammonia the circulation became more vigorous, and I left him in twenty minutes with a marked diminution of his pain, and he expressed a great desire to sleep, a luxury which his sufferings had almost deprived him of the previous night.

The slight action of glonoine on Dr. Fuller, who was in vigorous health and not suffering from fatigue at the time he took the dose, and the powerful effect produced upon the hospital patient, whose nervous energy was reduced by suffering and want of sleep, affords a good illustration of the explanation which I have ventured to give of the apparently opposite results which have been observed.

Some pure glonoine was procured from Morson's, in Southampton-row; this was one hundred times stronger than that, two drops of which produced so powerful an effect on me. One drop of this pure glonoine was given to a mouse, and larger quantities to a calf, cats, and rabbits, without producing any appreciable effect, thereby confirming the conclusion before arrived at that not the glonoine, but the spirit in which it was dissolved, had affected the animals which died in the former experiments.

The curious fact of certain poisons exerting a powerful influence over some animal systems, while harmless to others, is not without analogy. It is stated on good authority by a recent writer that the horse can with safety eat aconite, the goat hemlock, and the rabbit belladonna; and Dr. Livingstone mentions a small African insect, the tetsze, whose bite is fatal to the horse, ox, and dog, but affects man in only a very trifling degree.

My friend, Mr. Lawrence, Surgeon, of Brighton, slightly moistened the tip of his finger with the solution of glonoine (1 per cent.) and applied it to his tongue; he took only just sufficient to taste the fluid. In about three minutes he experienced a "muddled" sensation in his head, and felt as if he could have easily gone to sleep in the operating room, where we then were; he believes that had he taken a little more he must have fallen asleep; his appetite failed for the rest of the day, and he passed a restless night. Mr. Lawrence regards the effect produced on him as the more remarkable that he has very little susceptibility to the influence of the common narcotic drugs.

Case 5.—G. F., aged 24, epileptic eight years. After a fit on the 4th of March, he slept nearly an hour, and then awoke in a state of violent mania, struggling with such violence that it was with difficulty two persons could keep him in bed; with eyeballs projecting, and mouth half opened, he looked as if he were contemplating some afflicting sight, while he rapidly reiterated an unmeaning monosylla-

ble, doe-doe-doe, in a painfully plaintive tone. In this state I was called to attend Mr. F. I touched his tongue with a cork moistened with solution of glonoine, and after the third application his struggles ceased, and he sank into a tranquil sleep, from which he awoke refreshed and well the next morning.

In this case the rapidly acting sedative influence of the medicine was most marked, and the exceedingly small dose required made it peculiarly valuable, as no bulky remedy could have been taken owing to the excited condition of the patient.

Case 6.—Mrs. R. sent for me in the night of March 17, on account of severe neuralgic pain in the lower part of the cervical region of her spine and right arm. Her sufferings had been severe for some hours, and still continued, when I applied less than a drop of glonoine solution to her tongue. In a short time this patient complained of a peculiar pain and pulsation in her head; she became drowsy, and buried her head in the pillow, but retained sufficient consciousness to request that I would not leave her while she felt "so strange." These effects lasted about ten minutes, during which she had several attacks of general rigor, which were succeeded by nausea and coldness of the extremities; but the neuralgic pain was quite subdued for a time, though it returned in a much smaller degree.

Case 7.—Mrs. L. aged 28, weak from undue lactation and neglect of air and exercise, consulted me, March 22, on account of supraorbital neuralgia, from which she had suffered more than a week; the pain usually commenced at six o'clock in the morning, and continued till eleven or twelve. A quarter of a drop of solution of glonoine was given, and the pain ceased for that day almost immediately. She recovered in a few days under appropriate treatment.

Case 8.—Mrs. D., aged 36, under treatment for dyspepsia. March 29, she complained of severe hemicrania, which had troubled her for many days. She took about a drop of solution of glonoine in perfect ignorance of any effect it was likely to produce. In a minute or so, she reclined on a sofa to save her from falling, and put her hand to her forehead where she experienced a pulsating pain. In a few minutes more her head was free from pain of any kind, and there had been no return two days after.

Case 9.—Miss V., aged 28, frequently suffered severely from what she calls nervous headaches; these she has been in the habit of curing with Indian hemp. On the 1st of April, a violent headache was suddenly produced by a fright caused by her horse; she was kept awake nearly all night, and the following morning she requested me to give her something for the pain, which continued severe. Her old remedy had been discontinued by my advice. I applied a small quantity of the dilution of glonoine to the tip of her tongue, which produced scarcely any effect. Two drops were then given, and in about a minute she became giddy, and said it is just like taking chloroform; she lay back in a chair, supporting her forehead with her hand, trembled, and said faintly that her feet were cold: her pulse rose to 100—before it was 80. In about two minutes she recovered, complained of great tightness at the root of the neck, which soon subsided. Her headache was gone; and in half-an-hour she left my house feeling unusually well and "bright," as she expressed it.

Forcibly struck by the slight effect produced in the last two cases by what, from my former experience, I should have considered a powerful dose, I myself took two drops of the solution, and only experienced a sense of fulness and throbbing in the head; my pulse rose twenty in the minute. The experiment was repeated on a married lady, aged 32, with a similar result. The cases 8 and 9 had been treated with a fresh specimen of the glonoine.

From what has been observed it would appear that glonoine is liable to great variation in strength. That under ordinary circumstances of health and vigour it may be taken in small quantities with safety, but that when the nervous energy is much diminished by fatigue or suffering, it may act with the greatest power.

[Mr. Augustus James, of University College, with regard to nitroglycerine, says, in a letter to the editor of the 'Medical Times and Gazette.'—]

I saw my brother take one minim, and in half-an-hour, as no serious effect followed, after counting my pulse, which was eighty, I took the same dose. We *now purposely* changed the subject of conversation. In the course of a few

minutes I exclaimed, "I feel drunk." This sensation was quickly followed up by a dull aching pain at the back of my head, which was alternately better and worse, each accession becoming more and more severe. It soon extended to the forehead and the back of the neck, in which there was a decided feeling of stiffness. I also experienced some difficulty of deglutition, succeeded by nausea, retching, and flatulence. A profuse perspiration ensued, and in a quarter of an hour the symptoms began to abate, but I continued dull and heavy. My pulse was now 100. Considerable headache remained, which increased in the after part of the day to such an extent that at six o'clock I was compelled to go to bed. At break of day I was not relieved, but after a few hours' more sleep I arose in my usual health. I have only to add that I made this brief sketch of my own feelings before reading the contradictory statements which have appeared.—*Med. Times and Gazette, April* 10, 1858, *p.* 384.

191.—*Treatment of the Drowned.*—Dr. Cornstock is surprised in the recent discussions on this subject that no mention has been made of applications to the nose. In one of the instances of longest submersion on record, the first signs of recovery followed the pouring ʒ ½ of sp. ammon. aromat. into the nostrils, and thrusting a feather dipped in ammonia as far as it would go. Dr. Wistar declared that the most successful treatment consisted in stimulating enemata, suppositories of mustard and red pepper, and a plaster of these substances applied to the anus and perineum. He believed that life lingered longest in this part of the body.—*Boston Journal.*—*Medical Times and Gazette, Feb.* 6, 1858, *p.* 147.

192.—ON EXCISION OF THE CUBOID BONE IN OBSTINATE CASES OF TALIPES VARUS.

By Samuel Solly, Esq., F.R.S.

[In June, 1852, a native of New Granada, South America, aged 21, came under Mr. Solly's care with talipes varus of both feet, in its worst form, the left foot, however, being more misshapen and inverted than the right. The patient was very difficult to control, and peculiarly sensitive of pain. In both feet the tendons of the tibialis anticus, posticus, flexor communis, and flexer longus pollicis, were divided; also the plantar fascia. After this instruments were used and great pains taken with the case, but the patient was restless and would not submit to the pressure exercised by the instruments. Mr. Solly, at Dr. Little's suggestion, determined to remove the cuboid bone of the left foot whilst the patient was under the influence of chloroform; a free incision was made, and a wedge-shaped piece cut from its centre by a sharp gouge, without opening any articulation. As this did not produce much effect, the articulation with the metatarsal bone of the little toe was opened, and the anterior part of the bone removed. The foot could immediately be placed in the proper position.]

From this fact it was clear that if the mechanical apparatus could have been then and there applied, and the foot retained in this amended position, the cure would have been completed with the healing of the wound. Having, however, to wait three weeks before pressure could be applied, and then only at intervals, most of the advantage expected to be derived from the excision was lost. This appears to me one of the greatest objections to its performance. If the operation should, from any peculiar circumstances, as in the present case, be again deemed advisable, I do not recommend the plan of gouging away the bone, as adopted in this instance. I should advise the removal of the whole bone; for although an incision into the numerous joints which unite it to the rest of the tarsus is a formidable proceeding, the effect of the operation so performed will be more permanent. The very reason which induces me to advocate the use of the gouge instead of the knife in the removal of carious bone renders this proceeding, in the case of deformity, objectionable. The bone left in either case reproduces new tissue nearly equivalent in bulk to that removed. In the case of disease this

reparation is desirable; but in that of deformity I need hardly say it interferes with the object of the excision.

[No constitutional disturbance followed, and the wound healed in fourteen days; but owing to the tenderness remaining, no apparatus could be placed on the foot for a week longer. Ultimately the soles of both feet could be placed fairly on the ground, and the deformity, though not quite, was nearly removed.]

With regard to the effect produced in this case by the removal of the cuboid bone, I do not consider it is such as to encourage the profession to perform the operation, except in some few old and obstinate cases that have resisted every other treatment.—*Medico-Chirurgical Transactions*, 1858, p. 119.

193.—ON THE DIAGNOSIS AND TREATMENT OF ULCERS OF THE TONGUE.

By JAMES PAGET, Esq., Assistant-Surgeon to St. Bartholomew's Hospital.

[Ulcers of the tongue may be thus classified:—]

1. Simple. *a.* From superficial inflammation. *b.* From constant irritation, as by a rough tooth.
2. Aphthous.
3. Mercurial.
4. Strumous.
5. Syphilitic: *a.* superficial; *b.* deep; *c.* inherited.
6. Cancerous; *a.* superficial, or papillary; *b.* deep or massive.
7. Tuberculous.

1. (*a.*) Simple superficial ulcers of the mucous membrane commonly occur, with a general florid bright congestion of the surface of the tongue, in dyspeptic people, and those who habitually eat and drink too much. They are usually small, superficial ulcers or abrasions, very sore and sensitive, with no definite shape or plan. They are not likely to be confounded with any other ulcers, unless with the superficial syphilitic. From these they differ in their acute course, in their being about the tip, rather than the sides of the tongue, and in the active congestion of the mucous membrane which is generally associated with them, and only seldom, or as by accident, with the syphilitic.

The obvious remedy of ulcers of this kind, when they are due to excess, is reformation of diet and active purging. If they survive these, they should be touched with nitrate of silver. When they are only occasional consequences of habitual dyspepsia, the same local means will be useful, but, of course, they cannot be finally cured except by the remedy of the dyspepsia.

When these ulcers occur at or near the frænum of the tongue, they are sometimes so small that they are apt to be overlooked; yet they are extremely painful, and may endure long, or frequently recur.

(*b.*) Ulcers of the tongue, due to the irritation of rough or sharp-edged teeth, vary much in appearance, according to the general condition of the patient, their date, and many other conditions. They may be like rough excoriations, with shreddy foul bases and borders ill-smelling, surrounded with swelling, and a sodden, but not hardened, state of the tongue. Or, with similar general characters, they may extend deep into the tongue; the surface of the tongue, and of the adjacent part of the gums, being in both of these cases covered with a thick creamy or pasty layer. Or, again, while the rest of the tongue may be nearly healthy, the ulcer of more chronic progress may be well-defined, regular, clean at its base, with upraised, rounded, and hard "callous" borders.

Due regard to the teeth will usually determine both the diagnosis and the remedy of these ulcers. But, it must be noted, that so long as the general health and digestion are good, the tongue may tolerate without damage the irritation of rough teeth. Patients, therefore, knowing that their teeth are not unusually bad, will ascribe the ulcer of the tongue to any cause but them; and, even after the removal or smoothing of the teeth, the ulcers may not heal till the general health is improved. And, again, cancerous disease may be determined to a particular portion of the tongue by the constant irritation of a tooth; and extraction will *only for a time* diminish the activity of the disease.

2. Aphthous ulceration of the tongue may scarcely need description, for its frequency in children may make it easily known when, more rarely, it is seen in adults. With general heat, increased secretion of saliva, and general redness of the mucous membrane of the tongue, (the lips and gums also commonly participating) aphthous ulcers appear as small, flat, circular, or oval ulcers, following vesicles. They are sometimes single, and may then be nearly half an inch in diameter; but more commonly they are clustered about the fore part of the tongue, or appear in successive crops. Their bases are smooth, greyish or yellowish, with very thin adherent slough; and their borders are well defined, not only by the cleanness with which the superficial layer of mucous membrane is removed, but by the bright crimson areola which surrounds them without elevation or hardness.

With these characters, there is usually active gastric or intestinal irritation. The healing of the ulcers will follow that of the irritation, but will be helped by the application of nitrate of silver in substance or strong solution.

Aphthous ulcers of the tongue may be confounded with the simple and the syphilitic, superficial ulcers. The safest distinctions will be found in their acuteness, the sloughs on their bases, the bright areola, and the attendant active irritation of the stomach or intestines.

3. Mercurial ulcers of the tongue, such as occur in or after ptyalism, may generally be known at once, by the attendant affection of the gums, with pasty deposits at the teeth, by the peculiar fetor from the abundant decomposing saliva, by the general enlargement and sodden state of the tongue. In a former paper I have spoken of their treatment.

4. Strumous ulcers of the tongue (as I believe they may fairly be called) are rare. They occur most frequently in persons under 20, and I have not seen an instance after 30. Their usual chronic course is, that they commence in one or more lumps in the substance of the tongue, lumps that are deep-set, firm, compressible, elastic, ill-defined, and little, if at all painful. With slow progress each lump seems to proceed to central suppuration, and thence to ulceration. Hence is derived either a small irregular opening into the central cavity, or, more commonly, a larger irregular ulcer, with a flat tough base, unequally excavated, and with thick unequal overhanging margin. The ulcers may slowly extend, but they generally remain long stationary, just not healing; and the parts about them become thick, tough, and large, as if with chronic inflammation in all the adjacent textures of the tongue. Even after the ulcers are healed, I think the enlargement may increase, and produce a peculiar form of hypertrophy, with toughness, pallor, and an uneven seamed and scarred surface.

The likeness is evident between this disease, in all its essential features, and that which we recognise, in other parts, as strumous abscess and strumous ulceration. This is not merely chronic abscess, for abscesses of very slow progress do occur in the tongue, and when they are emptied they heal quickly, and the recovery is complete. But, on the other hand, these strumous diseases of the tongue differ from both the syphilitic and the cancerous (with which they are most apt to be confounded), by the ulceration being usually preceded by distinct suppuration. Other diagnostic characters are, that the induration that accompanies or precedes the strumous ulcers is never intense or well-defined; it is, rather, a toughness with diffuse enlargement, not nodular or warty, not painful, not usually accompanied with lymphatic disease. These characters, however, may be insufficient to distinguish strumous ulcers from those of inherent syphilis, to which I shall presently refer. The diagnosis may be assisted by the existence of other marked strumous affections, or, if not by these, by the test of treatment. Iodide of potassium will quickly heal the syphilitic ulcers; but will very slowly, if at all, do good to the strumous. The only remedies for these are the same as for strumous disease, of similar type, in any other part; especially, I think, the cod-liver oil.

5. Syphilitic ulcers of the tongue occur in at least two very different forms, the superficial and the deep. The former are related, in their nearest analogy, to the cases of syphilitic psoriasis of the palms and soles; the latter to the deep ulcers which follow subcutaneous indurations (or gummata), such as one sees especially about the upper part of the leg, or more rarely in the lip or cheek. The superfi-

cial, occurring usually with similar disease of the lips, are among the later and most inveterate secondary symptoms; the deep are tertiary. In what measure any of them may be due to mercury or iodine, as well as to syphilis, I cannot say; but I have seen no reason to believe that either mercury or iodine alone will produce any of them.

(*a.*) Of the superficial ulcers, the most common are such as appear at the sides of the tongue. Some of these, indeed, may not deserve the name of ulcers; for they have thin coverings of epithelium, and do not bleed when even roughly touched. They may be like little oblique or starred fissures in the edge or tip of the tongue; or may appear as pale, bald, raw patches on the mucous membrane; or as such patches, with deeper ulceration at their centres; or again, there may be single, flat-based, defined, and thin-bordered ulcers through nearly the whole thickness of the mucous membrane; and with any of these forms of the disease there may be round the ulcers little groups of clusters of florid prominent papillæ.

All the superficial syphilitic ulcers of the tongue are very sensitive and sore; but there is little increase of vascularity in or near them, except in cases of accidental complication, through gluttony, intemperance, or other exciting causes. In their long duration, nearly the whole surface of the tongue may become opaque-whitish, or pale purple, smooth, as if without papillæ, and fissured, and the whole organ may become large and thick.

Except the worst cases of cachectic syphilitic ulcers, I believe no affections of the kind are so nearly incurable among out-patients as these forms of disease of the tongue. Among those who cannot use the moist mercurial fumigation (and such are most out-patients), I believe that the best general plan is to give a grain of calomel and half a grain of opium every night, for no less than two months. This plan will certainly cure some, and do harm to none, and improve many whom it does not cure. For local applications, none seem to give more comfort than the occasional touching of the sores with the solid nitrate of silver, and the frequent washing of the mouth with a lotion containing one or two drachms of the diluted nitric acid in a pint of water.

I have already said that simple superficial ulcers of the tongue may generally be distinguished from the syphilitic, chiefly by the concomitant florid inflammation of the mucous membrane. Similar inflammation, accidentally associated with the syphilitic ulcers, may make the diagnosis doubtful; but the doubt is not practically important; for a rule holds here, as in many other cases; namely, that it is not advisable to give specific medicines while active inflammation accompanies specific disease. The inflammation must be treated first, then the specific disease; and in the case of superficial ulcers of the tongue, if they do not quickly heal when the inflammation passes by, the diagnosis of syphilis is made more clear.

(*b.*) In the case of the deep syphilitic ulcers, we can commonly see or hear of one or more preceding lumps of firm, inelastic indurations, well-defined, enlarging the tongue, and covered with tense, adherent, smooth, and glossy mucous membrane. The usual seat of the induration is in the upper part of the tongue, often extending far back, but rarely affecting its borders or inferior surface, and still more rarely reaching the floor of the mouth. The induration may, for two or three weeks, only enlarge; under treatment it may clear away; but more commonly it softens, and then either sloughs or ulcerates at its centre. The ulcer which succeeds is deep, excavated, sometimes angular, or cleft-like, with no regular form, bounded by the remains of the induration. Its borders may at first be ragged and sloughy; but they soon become smoother, and then appear as edges of thickened and hard mucous membrane, overhanging the cavity of the ulcer, and sometimes nearly meeting over it, so as to need to be disparted that the cavity may be seen. In this state the ulcer has no great tendency to spread; its disposition is rather to become indolent, half-healing, with increasing toughness of its boundaries, but without material enlargement of the tongue.

(*c.*) Ulcers so like these that I can name no difference, may be found in the tongues of young persons that have had no primary syphilis. I have already said that I believe them due to inherited syphilis. These cases, therefore, differing *from the last*-described only in their mode of origin, may neither need nor admit *diagnosis from them*; and the treatment of both is the same.

The other forms of ulcers of the tongue, with which these may be confounded, are the strumous, cancerous, and tuberculous. The diagnosis of the first has been already pointed out; that of the last will follow. From cancerous ulcers, the deep syphilitic may generally be known by their induration being less intense, not nodular; the mucous membrane over or near them smooth or glossy, not warty; their borders overhanging their bases, not everted or nodular; by the little pain that attends them if they are not inflamed; by their being at, or tending towards the dorsum of the tongue, rather than its sides or the floors of the mouth; by the absence usually of sympathetic disease; by their progress to ulceration occupying usually less than a month. Of course, a history of syphilis may help the diagnosis; but, the less it is relied on the better, unless other syphilitic affections be actually present. The age of the patient may also have some weight; the younger the less the probability of cancer.

If all these indications for the diagnosis fail, it may almost securely rest on the effect of treatment. Iodide of potassium will quickly cure, for a time, the syphilitic ulcer, but will have only a slight and transient influence on the cancerous one.

It is possible that a difficulty might happen in the diagnosis of syphilitic or other indurations, and fibrous or fibro-cellular tumours in the tongue. The distinction may be found in the tumours being of slower increase, moveable, and covered with healthy mucous membrane that slides over them.

6. Of cancerous diseases of the tongue one may observe two chief forms, both epithelial; namely, the superficial or papillary, and the deep-seated or massive, and, although cases may occur that confuse them, they are in general sufficiently distinct.

The superficial cancers before ulceration resemble most nearly the syphilitic condylomata and other diseases of the papillæ and mucous membrane, which will be mentioned in the next paper. The best distinctions will be found, generally, in that the cancers are more warty, or manifestly papillary or tuberculated, and more suddenly upraised and defined at their borders, than mere indurations of the mucous membrane are; and are more deeply seated in the very substance of the tongue, and thicker (being seldom less than a quarter of an inch thick), and have more defined and harder bases than the condylomata have. Generally, too, the cancers, even before ulceration, are attended with more afflux of blood to the adjacent parts of the tongue, and with a larger flow of saliva, and more pain both in themselves and about the ear, and jaw, and side of the head, than any of the diseases that at all resemble them. In their ulcerated state, the superficial cancers have additional diagnostic signs in their central ulcerated surfaces, or fissures, or excavations, surrounded by well-defined induration, the extent and depth of which are not diminished by the extension of the ulceration. The base of the ulcer is generally hard and uneven, coarsely granular, papillary or nodulated; and the borders are, generally, lobed, like pieces of conglomerated gland, sinuous, upraised, and, if the disease is active, everted over the surrounding surface. If the case can be watched, all these characters become more marked, and others yet more distinctive are added; such as the fixity of the tongue by the adhesion of the base of the ulcers to the adjacent parts, the enlargement and hardness of the submaxillary lymph-glands, a condition very rarely found with any other ulcer of the tongue, unless it be actually inflamed. Late in the disease, too, there will be a cachectic aspect; but I have never seen this till the other signs of cancer were so well marked that there was no need of it for diagnosis.

The massive, deep-seated cancers of the tongue are very rare. Before ulceration, and while the mucous membrane is not involved, they may resemble the syphilitic lumps, or the fibro-cellular tumours, or, with far less likeness, the deposits that precede the strumous ulcers; but, of all these, I have already named the diagnostic signs.

I have little to say of the treatment of cancers of the tongue. As a general rule, it is right to remove them whenever this can be done safely and freely, and the écraseur is an admirable instrument for the operation.

7. Tuberculous ulcers of the tongue are rarer than any of those now described. The best case I have yet seen was in a policeman, 37 years old. Nearly the whole of the right lateral surface of the tongue was ulcerated. The outline of the ulcer

nearly followed the borders of the tongue, but was in parts sinuous, or sharply eaten out. Its border was abrupt, neither elevated nor everted, nor undermined, surrounded with a fluid areola; at its base there was a slight elastic and pliant induration. The base of the ulcer was on the level of the superficial muscular fibres; appearing, in some parts, banded, as if the muscular tissue were exposed, in others, granulated; only at its posterior part the base was more deeply excavated. The disease was painful, attended with profuse flow of saliva, and very difficult use of the tongue.

In six months, what seemed at first a little pimple had led to this condition. The characters of the ulcer were such as I had seen in no other disease of the tongue; they were very like those of tuberculous ulcers of the intestines; but it might have been impossible to distinguish the affection as tuberculous, if it had not been associated with pulmonary tuberculosis. With this the patient died; and the ulcerated part of the tongue, examined after death, showed no mark of cancerous disease, but exact resemblance to distinct tuberculous ulceration of the vocal cords.—*Med. Times and Gazette, May* 15, 1858, *p.* 500.

194.—*Most Extensive Varix.*—When attending one of Mr. Porter's Lectures on Surgery, delivered at the Royal College of Surgeons in Ireland, we saw a drawing which he exhibited of a man's leg and thigh affected with varix, in which the dilated veins were represented like coils of ropes, of nearly an inch in diameter. We were especially reminded of this drawing on seeing an elderly woman brought into the operating theatre of University College Hospital on the 28th of April, the veins of whose left leg, but especially at the lower part of the thigh, were dilated to the size of small ropes. This was treated in the usual manner adopted by Mr. Erichsen, of applying pins under the veins, being careful not to puncture them, and then sutures over the pins. Six were applied on the right leg and thigh at its inner side, and three on the left leg, the varicose veins of which extended to the dorsum of the foot. The success of this plan of treating varicose veins may be judged of by the number of cases coming for treatment at this hospital, all of which are radically cured without the occurrence of even an unfavourable symptom. During the past two or three years we have seen upwards of seventy cases so treated. In the majority, Mr. Erichsen has divided the obliterated vein subcutaneously between the pins some six or seven days after the operation—a proceeding first recommended by Mr. Henry Lee, of King's College Hospital; but it is found that obliteration is complete without necessarily resorting to this latter procedure. —*Lancet, May* 15, 1858, *p.* 480.

195.—*Corrosive Collodion in Nævus.*—Dr. Cosfield reports, that he had derived great benefit from the employment of this substance (corrosive sublimate one part, and collodion eight parts) in the treatment of nævus. The eschar falls off from the tenth to the fourteenth day, and is not followed by suppuration. No pain is produced, and scarcely any cicatrix is left. For very small nævi one pencilling is enough, but in larger ones this has to be repeated; and in these it is best to effect their destruction gradually.—*Berlin Med. Zeitung.—Med. Times and Gazette, April* 24, 1858, *p.* 434.

196.—PSORIASIS OF THE MATRICES OF THE NAILS.

(Under the care of Dr. Hare, University College Hospital. Reported by Mr. Frederic B. White.)

It is curious how cases, in themselves rather rare, occur sometimes in clusters. Almost every one can call to mind instances of this kind. A rather unusual case occurred at University College Hospital a short time since, in which psoriasis affected the matrices of the nails only, and in which the diagnosis of course rested *solely on a careful* examination of the deposits under the nails.

A case connecting in an interesting manner the example just referred to, with

the more ordinary form of the disease, is at present under the care of Dr. Hare, at the above hospital.

The patient is a woman, aged 28, and on admission she presented but slight traces of the disease at any other part excepting the nails, the few spots she had being on the arm and forehead. She was, however, in the hospital twenty years ago, under treatment for psoriasis, which affected the whole body. She left much relieved after having been for 13 months an in-patient, but has been liable to slight recurrences of the disease ever since.

Her attention was first drawn to the nails of the great toe (which are the only ones diseased on the feet), on account of the pain caused by any exertion. These seem to have been more severely affected than those of the hand, the disease being probably aggravated by the pressure to which they were subjected in walking.

The scales were deposited in such abundance, as (unlike in the former case) to entirely separate the connexion between the nails and their matrices, so that they have been cast off and renewed three times.

On the right hand the matrix of the thumb, and on the left those of the middle and ring fingers are also similarly, though not so severely, affected. Thus there was also the usual tendency to symmetry, which is so generally observed in psoriasis, manifested in the toes, though not so clearly in the fingers. It may be remembered that in the former example the symmetry was very distinct.

This being the condition of the patient, Dr. Hare put her upon the plan of treatment which he has found to answer very well in cases of psoriasis—viz., liq. potassæ in half-drachm doses, and liq. arsenicalis in five-minim doses, three times daily, in water. She is, under this treatment, rapidly improving, the disease having almost entirely disappeared.—*Med. Times and Gazette, April* 24, 1858, *p.* 426.

197.—ON THE USE OF ROTTLERA TINCTORIA IN TÆNIA AND OTHER INTESTINAL WORMS.

By Dr. J. S. Ramskill, Physician to the Metropolitan Free Hospital.

[Kamala, or Kameela, is a brick-red powder, resembling lycopodium in its physical properties. It is brushed from the surface of the fruit of one of the Euphorbiaciæ, a native of India. By the microscope, it is seen to consist of small glandular stellate hairs and remains of stalks, leaves, &c. It yields an admirable and effective tincture. (Compare with an article by Dr. Alexander, 10th Foot, vol. xxxv.)]

According to my experience thus far, the alcoholic preparation of kamala is more uniformly effective than oil of male fern or than spirit of turpentine, and infinitely less disagreeable than either. In no case where a tænia was known to be present in the intestinal canal, evidenced by fragments occasionally passing away, has it failed to effect its expulsion; and in most cases where the head of the worm has been carefully looked for, it has been found.

Case 1.—On March 3rd, John F——, aged twenty-two, residing in St. George's in the East, was admitted a patient of the Metropolitan Free Hospital, with tape-worm. He first observed that he passed fragments of them six years since. Has passed as much as eleven yards at once; very rarely passed a week without having seen fragments. Formerly was at sea, and lived for long periods on salt meat, both pork and beef; likes salt and vegetables. Has taken turpentine, which did good for a few weeks; objects to take it again. Ordered tincture of kamala, two drachms; distilled water, 4 ounces. To be taken night and morning. To have three doses.

March 6th. By some mistake, the patient swallowed the tincture without water. Felt no result from the first or second dose, but vomited the third, at the same time three or four series of links some inches long passed away, including one tapering to a point (this he had been asked to look for). To repeat the three doses in water.

10th. The first dose caused purging; the second violent diarrhœa, and vomiting

for forty-eight hours. No worm nor fragments passed. Has now eczema of the scrotum, which he insists has been caused by the medicine.

Case 2.—Morris H——, aged sixty-three, was admitted a patient of the hospital on March 6th. He lives in Glasshouse-fields, Ratcliffe-highway; has had tapeworm five or six years, and has passed long pieces after taking turpentine. This drug has often cured him for six months, but never for a longer period. He is not fond of salt nor of vegetables; eats pork occasionally; suffers considerably from epigastric nervous sensations, faints, &c. Ordered, tincture of kamala, two drachms and a half; water one ounce: to be taken night and morning. After the second dose some "thousands of bits came away;" the third and last dose purged him very much, and made him feel sick, but he did not vomit. No head found, probably on account of carelessness in the search for it. The bowels continued irritable for some days, but no more fragments of tænia appeared.

Case 3.—Mary P——, aged twenty-one, admitted March 6th. Had tapeworm two years; is very feeble; appetite voracious or absent; complains greatly of epigastric fainting; dislikes salt, scarcely ever eats it with food; always fond of pork, eats it frequently. Ordered, tincture of kamala, two drachms; water, four ounces; to be taken night and morning. The physic operated six times; no pain, no vomiting; worm passed within twelve hours after taking the first dose; head found.

On the 17th she had not passed any further fragments, and observed that she felt better in health than she had done for years.

Case 4.—Emma H——, aged twenty-four, resides at Stepney; admitted a patient of the hospital on March 6th. She first saw fragments of tænia in the evacuations three years ago, and has seen them occasionally ever since. Suffers frequently from fits of "retching, lasting four or five hours together," and is not by any means able to stop it. She attributes this to the presence of tænia. Has suffered from it about three years—*i. e.*, since about the time she first discovered the fragments of worms; likes salt, and often eats pork. Ordered, tincture of kamala, two drachms; water, four ounces; to be taken night and morning for three times.

March 10th. After taking the second dose a great number of fragments passed; none after the third; did not find the head, perhaps did not examine sufficiently closely. She had no pain, purging, nor vomiting, but felt sick, and suffered much for the two days when taking the medicine with headache. To have three three-drachm doses of the tincture as before.

17th. The physic has made her violently sick, but it was not returned; no diarrhœa. She has not seen any more segments of the worm.

This patient has for the present disappeared, so that it cannot be determined whether the retching was caused by the tænia.

Case 5.—A. L——, aged thirty-six, resides in Whitechapel. First saw that he passed portions of tapeworm three years ago; has suffered during this time with all sorts of nervous feelings; is "always in a twitter;" he is a member of the Jewish church; they do not eat pork, he dislikes salt, and takes little vegetable with his dinner. Has taken turpentine three times, this drug punished him severely; he could not for a time pass urine. Has also taken the oil of male fern, after which he vomited greatly; he was much purged, and became delirious for seven or eight hours. He was ill for three weeks afterwards, in bed, and under treatment.

March 20th. Tincture of kamala, two drachms; water, two ounces, night and morning (three doses).

23rd. Saw three or four joints after the second dose; no vomiting nor diarrhœa. On examination I find he has by mistake only taken one-drachm-and-a-half doses. To increase each draught to three drachms night and morning.

26th. The first dose caused vomiting, but the medicine was not returned. After the lapse of half an hour, twelve yards of the worm, including the head, were passed. The second dose caused vomiting and diarrhœa, as did also the third, no further segments of worm passing.

Case 6.—Geo. W—, aged eighteen months, admitted on the 20th of March. The child was weaned at five months, owing to the mother's illness. Fragments *were first passed* a week ago, the same as specimen brought, which was a joint of *the full-sized tænia*. Some days several joints—that is, five or six, passed. The

child has "fallen away very much:" it is always craving for food or drink; it ate meat at six months old; is very fond of it now; has eaten pork. Ordered tincture of kamala, six minims; water, two drachms, night and morning.

March 27th. Some eighteen or twenty segments of worm have passed; no diarrhœa or sickness; the head of the worm has not yet passed.—*Lancet, May* 15, 1858, *p.* 476.

198.—*Arsenic in Chorea.*—Dr. RICE states that he has of late treated severe cases of chorea with great success by means of arsenic, the treatment occupying only from two to six weeks. He says:—"I am no believer in specifics, but I think arsenic is as sure to cure chorea as bark is to cure ague; the remedy must be watched and used with caution, and then it is entirely safe." He employs Fowler's solution, giving other medicines as adjuvants as the case requires them. —*Boston Journal.—Med. Times and Gazette, May* 8, 1858, *p.* 486.

199.—*New Operation for Artificial Pupil.*—Mr. CRITCHETT has recently adopted at the Moorfields Ophthalmic Hospital a mode of operation, where it is wished to displace the pupil, which is, we believe, novel. Instead of drawing out and snipping off a portion of iris, he draws it out and secures it by a fine ligature from slipping back. It may, perhaps, at the first mention seem that the result must be nearly the same as if the scissors were used, since the portion included in the ligature will slough away. There is, however, another point in Mr. Critchett's proposal which indeed constitutes its main feature. It has long been an aim with ophthalmic surgeons to discover some mode of operating by which the natural pupil should be simply displaced to the elected position without laceration of its margin. This was the end sought to be obtained by the ingenious suggestion of a surgeon of Nantes, to remove a small portion of cornea near its circumference, and then allow the iris to bulge and become adherent to the cicatrix. This latter mode of operating has been frequently adopted of late by Mr. Bowman and other English surgeons, and we have seen some excellent pupils obtained by it. It is of course the substance of the iris near its circumference which bulges into the wound, not its pupillary edge. Now, Mr. Critchett aims to exactly imitate this process, with the advantages that no portion of the cornea is excised, and that the result is much more certain. Having made an incision close to the corneal edge sufficient to admit of Leur's forceps, the iris is seized just within the opening (that is, very near to its attached border), and is gently drawn out until enough is prolapsed to allow of the application of the ligature. The ligature prevents all chance of the return of the iris which might otherwise follow. Mr. Critchett has now performed it in four instances, and last Friday Mr. Bowman also adopted it in a case under his care. It is, of course, best adapted for cases of leucoma, &c., where the iris itself is not diseased. If the pupil have strong adhesions, one or other of the numerous older methods would be better suited.—*Med. Times and Gazette, May* 8, 1858, *p.* 480.

200.—*Belladonna in Orchitis.*—M. DE LARUE recommends the following application, which, he says, promptly relieves the pain, and leads to a cure in a mean period of 8 days. Lard, 60 parts; aqueous ext. of belladonna, 16 parts. It should be applied gently every 2 hours in considerable quantity, the parts being afterwards covered with a linen compress, which is to remain unchanged.—*Rev. Med.—Med. Times and Gazette, Feb.* 13, 1858, *p.* 175.

201.—*Discolouration of the Conjunctiva with Nitrate of Silver.*—[It is a reasonable inference, from the experience gained in photography, that the hyposulphite of soda would remove the staining of the conjunctiva from the prolonged

use of nitrate of silver. Accordingly, at the Royal London Ophthalmic Hospital, Mr. Dixon has lately tried it in a case of this nature, in which the discolouration was considerable.] Mr. Dixon first tried the effect of a solution of cyanide of potassium, beginning with five grains to the ounce, and, as this did not produce irritation, going on to double that strength. The solution was applied twice a-day by means of an "eye-glass," so as to ensure a prolonged contact with the conjunctiva. After several months, no improvement appeared to have taken place. Mr. Dixon then tried a solution of hyposulphite of soda (gr. x ad ℥j.), applied in a similar manner. The patient has been using the latter remedy for two months, and, even with the weak solution, the improvement has been considerable; the conjunctiva has, in part, become of a natural colour, and the discolouration is altogether much reduced. The treatment is continued with a proportion of the salt of double the strength of that originally ordered. It is probable that a still stronger solution of the hyposulphite of soda might be safely employed, for its use has hitherto appeared to cause no irritation.—*Ophthalmic Hospital Reports, Jan.* 1858, *p.* 51.

202.—*Tinea Ciliaris.* By J. F. Streatfield, Esq.—In hospital practice, the treatment of this disease is rather unsatisfactory. It is chronic, and of little inconvenience to the patients,—the treatment is tedious, and they find the remedies difficult to be applied. To these neglected cases of long standing, the following methods are well suited:—In the first place, the expedient "fomentations to be used frequently to the eyes," ensures the necessary cleanliness, and is easily employed by the patients. To remove the old incrustations of the wide ulceration about the roots of the lashes, at first, I employ a pair of forceps, that meet only at their extremities, which are broad and blunt—the lid is steadied and slightly everted with one finger, and with the forceps the scab is seized close to the edge of the lid, and with slight traction, without closing the forceps, it is altogether detached, without bleeding, and with, perhaps, less pain than by any other means. It should not then be drawn over the whole length of the lashes, at the risk of removing them with it; but, when detached, left, and the lashes cut off close to their roots, wherever the disease exists. To obviate the apprehensions of some patients, it is advisable, before using the scissors, to bring them into contact with the skin of the lid for an instant previously. The lid should be then slightly everted, wiped with soft rag, and the whole of the raw surface on the outer edge of the lids (avoiding the Meibomian orifices) touched with the solid nitrate of silver. The scabs cannot accumulate again when the lashes are kept short, secretions are readily removed, any application to the diseased surface is easily made, the risk of distorting or ultimately losing the lashes much diminished, and their future growth improved. The lashes are ready to fall out from the protracted ulceration at their roots, and (when they are not cut off), they are probably pulled out, and Lippitudo is the result;* or by the drying of secretions, and cicatrization of the ulcers about the roots of the lashes, they are forced into abnormal positions, and Trichiasis is the consequence. But another very common case of inverted or otherwise distorted lashes, after this disease, is, I believe, the forcible and ignorant use of the local applications prescribed. The methods above advocated will be found to facilitate the ordinary treatment, to save the lashes, and to expedite the cure. After the caustic I generally order some simple ointment to be applied, night and morning, to the edge of the lids, and the ulceration is generally found to be inclined to heal.—*Ophthalmic Hospital Reports, Jan.* 1858, *p.* 52.

203.—ON THE TREATMENT OF ACUTE GLAUCOMA.

By J. Critchett, Esq.

The disease I am about to refer to, usually occurs rather past the middle period of life, and in persons of feeble constitution, either originally, or as the result of

* The entire hair bulb is casually abstracted, when the scabs are removed; but usually it is left in *the hair follicle, with a similar result,* inasmuch as, the cure of the disease obliterates the empty *orifice*

some debilitating cause. It generally attacks one eye at a time, and there is frequently a considerable interval between the invasion of the first and second eye. The symptoms come on very suddenly, and proceed with great rapidity. At the onset of the attack the pain is of a most intense character, extending to the brain, and lasting many hours, sometimes two or three days; there are frequent flashings of light, and the sight is rapidly and seriously impaired, and if the disease pursues its course in its worst form, is permanently destroyed. On examining the eye shortly after the onset of the disease, the appearance is very characteristic and peculiar, the pupil is fixed and widely dilated; the humours are dull and muddy, and cannot be fully lighted up by the ophthalmoscope; the surface of the globe is of a bluish red colour; the deeper layers of vessels appearing chiefly injected. The anterior chamber is reduced in size, and the lens seems thrust forward into the pupil. The globe is tender to the touch, and of stony hardness. At a subsequent stage, and when all perception of light is gone, these appearances undergo some important changes and modifications which are not quite uniform in their character. At one or more points the sclerotic frequently thins and bulges, the humours become much discoloured, and of a greenish hue, and the lens cataractous. The sclerotic looks thin and of a dark colour, as if the choroid could be seen through it; and upon the surface are seen some large blue distended vessels, showing that the chief onus of returning the blood is thrown upon these superficial veins.

It is to the earlier stages of this disease that I am desirous in this paper of directing attention. It is difficult to localise the precise seat of the inflammatory action at this stage, but it is probably the retina. The distinguishing feature of such cases, that which causes such intense agony, and so rapidly impairs and destroys the sight, is the distension to which the globe is subjected; the perfect balance that subsists in the normal state between the fluids of the eye and their firm inelastic fibrous case is lost, and the latter is placed in a condition of extreme tension by the former; a tension that is constantly increasing until the sclerotic thins and yields to the pressure from within, or until the impetus of the disease exhausts itself. All the ordinary methods of treatment are utterly useless in this disease; the most active antiphlogistic means, such as bleeding, mercury, antimony, &c., exert not the slightest influence in modifying it. I believe all practical ophthalmic surgeons will set their seal to this statement. Nor is this to be wondered at, since the real cause of the acute symptoms is left in full force.

Reflecting on these points, it seems that two indications are especially required: 1st, to relieve the pressure and re-establish the equilibrium between the containing and the contained; and, 2nd, to leave for a time a sort of safety-valve to prevent such equilibrium from being again disturbed. With a view of effecting this double object, I have recently performed the following operation. I introduce a broad needle through the cornea, close to its junction with the sclerotic, and allow the aqueous humour to escape. I then draw out a portion of the iris with a blunt hook, and leave it in the wound; or, if it protrude much, I remove a portion and leave the remainder in the wound. The immediate effect of this operation is to remove the tension of the globe, and relieve the pain; the secondary effect is the gradual and steady improvement of the sight; and, as far as I can at present judge, the remote effect is the removal of the tendency to fresh attacks. The idea of puncturing the globe for the purpose of relieving tension in cases of internal inflammation, is very old. It was suggested and practised by Mr. Wardrop and others, and ever since I have lectured on diseases of the eye, I have advocated the treatment; and in a lecture published in the 'Lancet' of September 9th, 1854, I related a case in which I put this plan in practice with a very successful result, and urged the treatment in similar cases.

Recently Von Gräfe, of Berlin, has practised a modification of the operation in a large number of cases of acute and chronic glaucoma, his plan being to remove a large piece of iris. The objection to the method of mere puncturation seems to be the rapidity with which the wound heals, and the tendency to relapse into the former condition of tension. And the advantage of drawing out a portion of the iris seems to be to allow time for the adjustment of the normal tension, and perhaps also the establishment of a communication between the anterior and posterior chambers.—*Ophthalmic Hospital Reports, Jan.* 1858, *p.* 58.

204.—ON THE SURGICAL TREATMENT OF GLAUCOMA.

By Richard Middlemore, Esq., Consulting Surgeon to the Birmingham Eye Infirmary, &c.

[Graefe's operation for relieving the tension of glaucoma involves some risk of aggravating the evils it is intended to relieve, and moreover would not be easily performed except by surgeons having the advantages of the practice afforded by some eye institution. We possess other means of accomplishing the same end, and requiring less delicacy of operation.]

The surgical method in question was first suggested by me, as regards its special mode and principle of action, in my Jacksonian Prize Essay for the year 1831, and was repeated in my "Treatise on the Diseases of the Eye," published a few years afterwards, as the following quotation will testify:—"As there is a preternatural fulness of the globe, it may be desirable to puncture the sclerotica; and I should advise that this be done whenever there is much local pain evidently depending on the tension of the globe, and particularly when vision is nearly destroyed, and the opposite organ is becoming similarly affected. A very fine grooved needle passed into the sclerotica, at about three or four lines behind the margin of the cornea, will enable you to discharge a portion of the vitreous humour very readily, and with infinite relief to the patient. The only other circumstance to which it is necessary for me to direct attention is to pass the grooved needle obliquely backwards; for, unless you adopt this precaution, you may aggravate the patient's sufferings by displacing the lens. In one or two cases of glaucoma, where the muddiness of the vitreous humour has been evidently consequent on the inflammation of the parts which secrete it, I have, on the subsidence of the inflammation of the hyaloid membrane, discharged the greater part of the turbid fluid by means of a fine grooved needle, in the hope that the new secretion would be more transparent; and I am confident that I have more than once practised this operation with the greatest advantage to my patient's vision. This, then, is a mode of viewing the remedial agency of the evacuation of the vitreous humour perfectly distinct from that which contemplates merely the relief of tension of the globe." I have for many years been accustomed to relieve extreme cases of conical cornea by occasionally discharging the aqueous humour by means of a minute puncture of the cornea, and so for the relief of staphyloma at its early stage, and especially that form of it occurring after ulceration of the cornea consequent on neglected purulent ophthalmia.

It will be seen from the following brief quotation, that the preceding treatment was based on a knowledge of a cause of the dimness of vision it was meant to relieve:—

"The dimness of vision cannot depend on the mere want of transparency in the vitreous humour," in fact, "the retina is compressed by an increase of its quantity."

Now, the effect of puncturing the sclerotica, once, twice, or many times if required, in glaucoma, as practised by me and recommended by me in my writings and lectures for the last twenty years, is so manifestly useful, that I submit it has a claim to attention, which it has never, as would appear from Mr. Hulke's letter, as yet received.

Let me now state the advantages of the method of relief by puncture of the sclerotica.

1. The tension of the globe is relieved and vision thereby improved.
2. A new and clear secretion is formed in the place of a less transparent one.
3. A tendency is communicated to the re-establishment of the normal fulness of the eye-ball; or, in other words, the re-adjustment of the fluid contents of the globe is promoted.—*Med. Times and Gazette, April* 24, 1858, *p.* 424.

205.—*Dilution of Salts used in the Treatment of Rheumatism.*—[Speaking of the use of lemon-juice in Rheumatism, Dr. Alexander remarks]—I have occa-
lly found very marked and decided benefit from its use; at other times it
ly appears inert, but gripes and purges, and has to be at once abandoned.

Where it succeeds, I believe its success is attributable to the vegetable salts of potass that it contains, citrates, malates, tartrates, &c., in a high state of dilution. We are in the habit, when we prescribe these salts, of giving them in too concentrated a form. Hence they often fail to be absorbed, and act as purgatives, instead of as renal depurants and alkalies.—*Dr. J. Alexander on Rheumatism and Gout*, 1858.

206.—*Treatment of Epilepsy.* By Dr. Sieveking.—The main indications which should guide us in the treatment of epilepsy are—to remove local congestion by counter-irritants, to promote the healthy action of the secernent organs, and to give tone to the constitution by vegetable and metallic roborants. I would express my belief that we possess no specific for epilepsy; the salts of zinc, which have of late been very prominently put forward, frequently fail.—*Medico-Chirurgical Transactions*, 1857, *p.* 164.

207.—*Parasiticides.*—The following is the formula for the "Compound Sulphur Ointment" of the Hospital for the Diseases of the Skin, which is in general use against scabies, favus, and true ringworm, diseases which depend upon parasites, which it is necessary to kill:—℞. Of sublimed sulphur half-a-pound, of the ammonio chloride of mercury half-an-ounce, and of the sulphuret of mercury half-an-ounce; to these well rubbed together add four ounces of olive-oil, sixteen ounces of fresh lard, and twenty minims of creosote. It will be seen that we have here in combination three different drugs, each possessing great efficiency in the destruction of insect and fungus life. The object in view, that of obtaining a vigorous compound, which at the same time shall not be irritating to the skin, is, we believe, exceedingly well attained. Mr. Startin, however, does not in any of these diseases rely only on the local measures. Patients suffering from scabies always take an acidulated saline aperient while using the ointment, and to those suffering from either favus or true ringworm, arsenic or iodide of potassium are usually ordered. In the treatment of ringworm the application of blisters to the patches is always resorted to, with the object of removing at once the cuticle and its infesting cryptogams. Favus is at this hospital acknowledged to be an incurable disease. The scalp may, however, be kept clean by the constant use of the ointment mentioned above, but if it be laid aside, even after years of treatment, the disease will to a certainty return. In regard to the diseases attended by parasitic growths, Mr. Startin holds with those dermatologists who consider that the constitution of the patient must be peculiar in some respects to admit of their attack. That the fungi, in fact, come as mites to cheese, not to all cheese, but to those only which are well kept, and beginning to decay. There is, we cannot help thinking, very weighty evidence in support of the view which holds that these diseases spread by mere accidental contagion, and the fungus once planted will attack the hairs of any child, quite irrespective of the state of health. Should this be admitted, the use of internal remedies, as a general rule, would be rendered superfluous; and so, indeed, it is, as far as we can ascertain from our own experience. During the last four years in the out-patients'-room of the Metropolitan Free Hospital, the writer has never prescribed any specific constitutional measures in favus, true ringworm, scabies, or contagious porrigo, relying wholly upon external applications; and he believes with equally good results as those obtained in the practice of the Cutaneous Institution. Not unfrequently in cases of scabies and porrigo, attended with excess of local irritation, and consequent febrile disturbances (especially in young children), salines and aperients have been ordered, but no cases have occurred in which either arsenic or iodine have been thought necessary.—*Med. Times and Gazette, May* 15, 1858, *p.* 502.

208.—*Treatment of the Syphilides.*—The treatment of the cutaneous forms of syphilis, which form a large part of the practice of the Hospital for Diseases of the Skin, is almost invariably conducted by means of both topical and general

remedies. Mercury, and the iodides, of course, constitute the bases of the formulæ for these affections. For the earliest forms of eruption, the scaly and papular, for instance, calomel and opium in pill are often ordered, but more frequently the bichloride in solution. The following is the prescription for the Mistura Hydrargyri Bichloridi of the Pharmacopœia:—℞. Of the bichloride of mercury two drachms, of strong hydrochloric acid one drachm, of spirits of camphor two drachms, of burnt sugar half a drachm, of water a gallon. The dose is from a drachm to two drachms, each drachm containing a twelfth of a grain of the bichloride. An extemporaneous biniodide of mercury is also much used, the formulæ for the mixture being as follows:—℞. Of the bichloride of mercury two drachms, of the iodide of potassium six ounces, of the tincture of cardamoms two ounces, and of water a gallon. Of this, the dose, a drachm, contains a tenth of a grain of the bichloride, and two grains of the iodide. Simultaneously with the use of either of these mixtures, Mr. Startin almost always orders the "Red Ointment" to be rubbed into the patches of eruption, or applied to any ulcers which may exist. The formula for this "Unguentum Rubrum," the prime favourite of the Institution is,—of the bisulphuret of mercury half an ounce, of the nitric oxide of mercury half an ounce, of creosote twenty minims, and of fresh lard sixteen ounces.—*Med. Times and Gazette, May* 15, 1858, *p.* 503.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE PRECEDING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

DISEASES AFFECTING THE SYSTEM GENERALLY.

ACUTE RHEUMATISM.—After having procured free evacuation by means of senna and salts, begin the administration of equal parts of vin. colch. and spt. tereb., in doses of ten drops every two or three hours. After a day or two, give in connexion with these (only at different intervals, say of five hours each), tr. ferri chlor. ten drops, using as much opium as may be necessary to quiet pain. Allow a free use of coffee of average strength. If the patient's appetite remain, allow a moderate use of his usual food at the customary intervals. (Dr. Gordon, p. 22.)

In acute articular rheumatism give large doses of iodide of potassium in conjunction with morphia. When more than one joint is affected do not use local means. (Dr. Hauschka, p. 22.)

Never bleed with the intention of diminishing the fibrine in the blood, for this constituent is only in excess from the other parts being wasted, or burned off as it were; it is an effect, and not a cause. Mercury should be avoided. Give lime juice ad libitum; apply leeches to the fingers, wrists, or ankles, if there is much local inflammation; and it will be a rare thing to have the convalescence prolonged above a fortnight. (Dr. Inman, *Liverpool Med. Jour., Jan.* 1858, *p.* 15.)

CANCER.—A very handy and efficient caustic for the removal of cancerous tumours is powdered sulphate of zinc, moistened with concentrated sulphuric acid, and applied as a paste. The resulting cicatrice is soft and good. (Mr. H. Thompson, p. 265.)

Generally the knife should be preferred to escharotics for the removal of cancerous tumours. Escharotics are most applicable when the disease is superficial; they should be employed of sufficient strength to destroy the whole morbid part by one application, if possible, since by tampering with them much irritation and rapid increase of the disease is caused. Of all escharotics the best is sulphuric acid, made into a paste with fine sawdust. The parts round should be protected by being coated with a solution of gutta percha in chloroform, and a thick piece, with a central aperture to fit the tumour, should also be closely applied, being first softened by heat. A thin piece may now be glued round the edge of the opening, so that when supported by a stuffing of lint it may form a wall enclosing the diseased part. (Professor Syme, p. 26.)

In a case detailed to illustrate the mode of removal of cancerous growths by congelation, the following was the mode of procedure:—The tumour (in the right breast) was congealed for two hours by a frigorific mixture, at a temperature ranging from 8 to 12 degrees below zero, Fahr. This mixture, which was frequently renewed, was confined to the part by a cup or broad flat ring of gutta percha, having a short flexible tube, closed by a stop-cock issuing from its lower border. Immediately after removing the mixture, nitric acid was applied to the skin, and after the acid, a thin layer of chloride of zinc paste was placed on it and allowed to remain until the next day. There was no pain caused by these proceedings beyond a sensation of tingling on the application of the cold. T

caustic was daily inserted, (incisions having been made through the slough) yet the patient's general health remained undisturbed till she left the hospital. By this mode of removal, all shock or excessive inflammation are entirely avoided, besides the absence of pain. (Dr. J. Arnott, p. 27.)

Of the Tongue.—In a case which lately occurred at the Cancer Hospital, where the tongue was much enlarged, of an irregular mottled colour, with purplish discolorations here and there, and superficially ulcerated in two or three places, by means of careful attention to diet and the use of tonic remedies, together with the local application of powdered sulphate of copper, and the occasional use of a mild borax lotion, not only have the ulcers all healed, but the tongue is greatly reduced in size. (Dr. Marsden, p. 29.)

Goitre.—Dr. Mouat, of Bengal, states that upwards of 60,000 cases of goitre have been treated in that country on the following plan, which generally effects a cure at once, if not, a second repetition next year suffices:—Melt 3 lbs. of lard or mutton suet, strain and clean; when nearly cool, add 9 drachms of biniodide of mercury, taking care to make the powder fine by trituration in a mortar. Work in a mortar until no grains of red are apparent in the ointment, and put in pots for use, taking care always to keep both powder and ointment from the rays of light. Use as follows:—About an hour after sunrise apply the ointment to the goitre with a spatula made of ivory, or thin, broad, smooth bamboo, quantity according to size of tumour—rub it well in for at least ten minutes. Let the patient then sit with his goitre held well up to the sun, and let him remain so, as long as he can endure it. It is probable that about noon he will suffer severe pain from the blistering effect of the ointment, although no pustules are raised on the skin. About 2 p.m., the ointment should again be applied with a very careful and tender hand, and the patient should be dispatched to his home with orders not to touch the ointment on any account with the hand, but to allow it to be gradually absorbed, which absorption will be complete on the third day. (p. 264.)

Low Fever.—The blood of low fever more nearly resembles that of scurvy and purpura than that of any other disease. There is the same excess of black blood-discs, the same deficiency of neutral salts and organizable lymph. As in scurvy, so in low fever, great benefit will be derived from the use of acids—muriatic acid, being that least foreign to the system, should be preferred. Give this acid, diluted with water, freely to the patient, promoting the action of the skin by tepid sponging. We must not expect this or any other treatment to cut short the disease, only to promote and hasten a favourable termination. (Dr. T. K. Chambers, p. 17.)

Scurvy.—Chlorate of potash has the effect of curing the spongy state of the gums in this disease much more rapidly than any other treatment. It should be combined with lime-juice. This salt appears to be curative in all inflammations of the mouth and gums whatever their cause, syphilitic and cancerous affections alone excepted. (Mr. Corner, p. 29.)

Typhoid Fever.—In these cases, perhaps, one of the most successful plans of treatment is the administration of wine and quinine. At first the quinine should be given in large doses of ten grains every two hours. This, in a case treated at St. George's Hospital, caused a very striking change, the pulse came down, the skin became cool and moist, and the diarrhœa ceased. Should this effect ensue, the quinine should be given in smaller doses, as of two grains three times a-day. (Dr. Fuller, p. 19.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Cerebral Diseases.—There are three different states of the muscles in hemiplegia, indicating different conditions of brain, and requiring different treatment. If the paralysed muscles be *perfectly flaccid* the cerebral lesion is atrophic in its nature, the very opposite to inflammatory; the vital powers are below par. If the muscles exhibit any resistance to motion the lesion is of an irritative kind, as
dl apoplectic clot, with laceration of healthy brain tissue around. When the
s are hard and rigid, the brain lesion is decidedly irritative, sometimes in-
tory. In the first a supporting plan of treatment is required; ammonia,

wine, and quinine. In the last bleeding, or, at all events, mercury is necessary. A clot, however small, will invariably give rise to coma; if very small indeed, it may be merely a lethargic state; if large, the coma will be long and profound, and accompanied by snoring. If the hemiplegia be from white or atrophic softening merely there will be no prolonged, if any, loss of consciousness, and the intellect will generally speedily recover. (Dr. R. B. Todd, p. 30.)

Chorea.—Whenever you see a case of chorea in a young person, always suspect that it has had its origin in rheumatism. Disease of the heart is very frequently found in cases of this nature. Most reliance is to be placed on sulphate or oxide of zinc in the treatment of this disease. (Dr. T. Addison, p. 50.)

"Arsenic is as sure to cure chorea as bark is to cure ague." (Dr. Rice, p. 311.)

Coup de Soleil.—This is a disease of depression, and will not be relieved but aggravated by lowering remedies. The best treatment is to unfasten as gently as possible the man's dress and accoutrements, expose the neck and chest, get him into the shade if possible, raise his head a little, commence cold affusion over the head, chest, and epigastrium, continuing this at intervals till consciousness returns. A mild stimulant mixture must now be given in small doses. Clothing for troops whilst in tropical parts should be suited to the climate; for the head, a light woollen forage cap, with a good peak, and protected by a good turban, the curtain extending more than it does on each side to protect the temples. No stock is admissible. The frock and trousers should be of some light woollen texture, and loose, except round the ankles. Flannel should be worn next the skin, and even in the hottest weather a good blanket should be taken for the night, which is always excessively chilly. (Dr. G. S. Beatson, p. 260.)

Delirium Tremens.—Do not use alcohol, or even opium, in the treatment of this disease; the latter is only a palliative which hides and often aggravates the disease. The patient must in the first place abstain from all intoxicating agents, and take aperients, diuretics, and diaphoretics, to get rid of the nervous poison alcohol from the body. An emetic dose of ipecacuanha in the commencement is invaluable—it acts as a stimulant to the whole system, equalizing the circulation and promoting the secretions; and, moreover, it has the effect of removing the desire for intoxicating drinks. (Mr. J. Higginbottom, p. 43.)

Epilepsy.—Phosphate of zinc is of the greatest use in the treatment of epilepsy and other nervous affections resulting from cerebral exhaustion. In convalescence from fevers which induce great wasting of tissues, and notably of brain matter to the extent not unfrequently of leading to insanity, the phosphate of zinc with quinine produces the most satisfactory results; the proper solvent is dilute phosphoric acid. (Dr. Barnes, p. 48.)

Remove local congestion by counter-irritants, promote the healthy action of the secernent organs, and give tone to the constitution by vegetable and metallic roborants. There is no specific for epilepsy, and the salts of zinc, so prominently put forward of late, often fail. (Dr. Sieveking, p. 315.)

Hemicrania.—Dissolve four grains of acetate of morphia in a few drops of acetic acid, and add ʒ iss. of laurel water and 10 drops of prussic acid. Of this mixture 10 drops (or in very excitable persons five) are to be mixed with an equal quantity of water, and strongly aspired by the nostril corresponding to the side of the pain, keeping the other closed. The relief is immediate; but the existence of a coryza is a contra-indication to the employment of the remedy. (Dr. Jung, p. 259.)

Hydrocephalus.—When once the soft union of the cranial bones yields to the expanding influence of the fluid within the brain, the progress of the effusion is mainly attributable to an atonic condition of the vessels. This gradual increase of fluid may be prevented by the application of permanent equable pressure by means of an elastic cap, closely fitting the head. In a case treated by the author the effusion of fluid was considerably reduced, approximation and union of the previously widely separated cranial bones being induced. (Mr. R. Phillips, p. 235.)

Incomplete Paraplegia.—There is a form of incomplete paraplegia—mere weakness, and loss of control over the muscles of the limbs—the effect of disease of the bladder, kidneys, or urinary passages, and only cured by the relief of this primary disease. There may be no pain in the dorsal region on pressure, but cases have occurred where the pain on pressure in the dorsal region led to the diagnosis of spinal disease, and after death the spine and its contents were found perfectly

healthy and the kidneys diseased. The intimate nervous connection between the urinary organs and the cord by means of the sympathetic is probably the cause. Some impediment to the discharge of urine is one of the earliest symptoms. There is generally obstinate gastric derangement. The sensibility of the limbs is not impaired, or very slightly, and they do not become atrophied or lower in temperature than natural. The sphincter ani is not paralysed. The bladder to a great extent loses its contractility, but not entirely. There is no history of violent neuralgic symptoms at the commencement of the disease. Great amendment will often follow catheterism and the removal of any obstruction to the free discharge of urine. Exercise, warm clothing, bathing, and change of air are important. Avoid aloes and saline aperients, as they tend to increase the urinary irritation. Gregory's powder is the best aperient. The patient may wear an elastic belt to support the lax abdominal parietes. A mixture of cantharides and iron tends much to restore the contractile power of the bladder and relieve the urinary irritation. Opium relieves irritability very much. That which is productive of most good effects is a complete change of life, as a long sea voyage. Paraplegia is a common result of frequent seminal emissions, voluntary or involuntary; it is undeniable that the frequent agitation of the nervous system, so caused, leads to chronic inflammation and softening of the cord, with paraplegia as a necessary consequence. (Mr. Spencer Wells, p. 37.)

Nervous Headache.—To relieve the immediate distressing pain, anodynes are required. If opium or its alkaloid cannot be resorted to, there are other efficient anodynes which may be appealed to. Of these aconite is most to be relied on, from one to two minims of Fleming's tincture may be given and repeated every two or three hours if necessary. In some cases the effect is marvellous. The action of chloroform in this particular is too transitory to be of any avail. There are also other agents which might be called nervines, as valerian, and amongst dietetic means, tea and coffee, which are particularly applicable when the headache is the result of fatigue, mental or bodily. Of tonics, to exalt the nervous tone of the system, quinine and arsenic are by far the best; iron being also added when there is an obvious deficiency in the red corpuscles of the blood. It is in that form of headache which comes on in distinct paroxysms at regular intervals that arsenic is of most value, it should be given in small doses and for a lengthened period. Perhaps next in value to quinine and arsenic, comes zinc, of which the valerianate is the most eligible preparation, but it is usually given in doses far too small; six grains are often productive of much relief, and cause no ill effects. (Dr. J. A. Symonds, p. 276.)

Spinal Irritation.—The majority of the symptoms considered as the result of spinal irritation arise from over-exertion of one or more portions of the muscular system in debilitated subjects. The spinal tenderness has a similar origin, and the other symptoms considered as resulting from spinal tenderness are concomitants only and referable to a common cause. (Dr. T. Inman, p. 30.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Endocarditis.—No matter what may be our opinion of the extent of endocarditis, we must meet the depression with stimulants and opium, and particularly with a full anodyne at night; and next, if we can obtain a rally, we must as soon as possible superadd local bleeding, blistering and the use of mercury, to check the effusion of lymph, and to proceed to the absorption of what has been poured out. In the subacute stages, rest and abstinence from stimulants form one of the most important points in the treatment; the patient should rest for weeks on a sofa or bed. In convalescence from pericarditis or endocarditis, you may give an anodyne every night. (Dr. Corrigan, p. 54.)

Nævi.—In the treatment of nævi by caustics, none is preferable to chloride of
[illegible]t, is more powerful in its action, and penetrates more deeply, than other
[illegible]s, and powerfully coagulates the blood in the tissues, surrounding the part
[illegible]*h it is applied.* The surrounding parts having been protected by sticking

plaster, or by a strong solution of gutta percha in chloroform, apply a paste composed of one part of the chloride of zinc to four of flour; this should be allowed to remain about twelve hours, when a white dense slough will have formed. As caustics are chiefly applicable where the nævus is large and superficial, it will seldom be necessary to repeat this; much pain is caused the first few hours, but this abates; the cicatrix is usually small. (Mr. J. F. West, p. 136.)

A case lately occurred to Mr. Hutchinson of the Metropolitan Free Hospital where there were more than a hundred distinctn ævi of the most superficial character on the same child; all were cured, except about twelve on the scalp, by the continued application of the compound iodine ointment. To the remainder it is proposed to apply nitric acid should they not diminish under a continuance of the former treatment. (p. 138.)

Mr. Haynes Walton has recently treated several cases of nævus in the following manner:—A small tendon knife having first been pushed into the base of the tumour and moved about a little slightly, to break up the tissue, a solution of tannin, a drachm to an ounce of water, is injected by means of a syringe with a small nozzle. This must be slowly performed, and must be given up directly the tension of the tumour becomes apparent; by this means the blood coagulates, and after the lapse of some weeks the tumour disappears. There is no risk of sloughing taking place as when the muriated tincture of iron is used. (p. 269.)

Apply a mixture of corrosive sublimate, one part, and collodion, eight parts; the eschar falls off in from ten to fourteen days, and is not followed by suppuration. No pain is produced, and scarcely any cicatrix is left. For very small nævi one pencilling is enough, but in larger ones this has to be repeated, and in these it is best to effect their destruction gradually. (Dr. Cösfield, p. 308.)

Varicose Veins.—In performing the operation of subcutaneous division of varicose veins, the two needles and their corresponding ligatures having been applied, it is not necessary to wait a couple of days before dividing the vein; this may be done at once with perfect safety, the blood between the two ligatures is evacuated, and thus all danger from its decomposing is avoided. The subcutaneous incision is pretty sure to heal by the first intention. (Mr. H. Lee, p. 175.)

During the last two or three years a large number of cases of varicose veins have been successfully treated by Mr. Erichsen's plan of applying pins under the veins, being careful not to puncture them, and then sutures over the pins. It is not necessary to the obliteration of the vein to divide it subcutaneously six or seven days after the operation. (p. 308.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Drowning.—In one instance of very long submersion the first signs of recovery followed the pouring ʒ ss. of sp. ammon. aromat. into the nostrils, and thrusting a feather dipped in ammonia as far up as it would go. (Dr. Cornstock, p. 303.)

Paracentesis Thoracis.—A trocar lately invented by Mr. Thompson of Westerham is well worthy of attention, it greatly lessens the likelihood of atmospheric air entering during the operation, and by its peculiar syphon action, facilitates the keeping up of a continuous flow of fluid. (p. 138.)

Phthisis.—Out of fourteen cases in which arrest of phthisis took place, in eight there was a complete change in the habits of life, not simply gentle walks or drives, but rough occupations, involving considerable and sometimes great exposure to vicissitudes of weather. Change of climate only seems to be directly beneficial, inasmuch as it gives more inducement to exercise. Patients should live generously, taking especially highly carbonaceous food, the free use of sugar, also of wine, beer, and other diffusible stimuli, which are of great use. Except perhaps cod-liver oil, no medicinal agents seem to act beyond mere palliatives. (Dr. Flint, p. 70.)

There are various conditions of the throat met with in phthisis. In the earlier stages the patient complains of dryness of the throat and cough, and on examination the throat is found smooth and shining, and the parts attenuated. It is a state of lessened tonicity without inflammatory action. A useful means of treatment here is the application of a mixture of equal parts of chloroform and olive oil, by

means of a large brush, the patient should also frequently swallow about a table spoonful of a strong solution of suet in milk; great relief is obtained from the application of a strong solution of nitrate of silver to the fauces by means of a large brush. When the case is more advanced, an inflammatory state appears, with distended vessels and enlarged mucous follicles, chiefly upon the pharynx, but also on the uvula. This, state and also where there is ulceration and fibrinous exudation, is best treated by the nitrate of silver. When the inflammation runs high and extends down the larynx, the application of nitrate of silver often causes alarming symptoms of choking; the best topical application is then equal parts of oil and liquor potassæ well laid on with a large brush. (Dr. E. Smith, p. 68.)

Pulmonary Diseases.—The cough and expectoration of pulmonary diseases are considerably alleviated, and in some instances entirely cured (when the disease is confined to the mucous membrane), by Dr. Horace Green's plan of injecting the bronchi with nitrate of silver solution. The manner of performing this operation and the precautions to be taken, will be found at p. 74 of this work. The instruments used are simple and inexpensive, and with proper care the operation not very difficult of performance. It promises to create a new era in the treatment of pulmonary affections, usually so unassailable from the impossibility of applying local treatment. (Prof. J. H. Bennett, p. 74.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

Carious Teeth, *Stopping for.*—A very good and easily applied cement for stopping teeth is soft sulphur; it is not acted on by any of the alimentary substances or dentifrices. Put some washed flour of sulphur in a test tube, heat it over a spirit lamp to over 350° Fahr., and pour it into cold water, when it will be a spongy mass, brown, soft, and elastic. A little ball of this should be pressed into the decayed tooth. (M. H. Henriot, p. 142.)

Cholera.—Dr. Black believes arsenic to have a specific action in cholera, from an experience of nearly two hundred cases, in none of which has it ever failed to produce a speedy and permanent cure. It may in very severe cases, where the cramps come on every few minutes, and the vomiting and purging are all but incessant, be given in doses of five drops of the liquor arsenicalis every fifteen minutes until the symptoms abate, and then be given every hour. (p. 248.)

Cynanche Maligna.—Give powdered guaiacum in combination with chlorate of potash. Support the strength with beef-tea, mutton-broth, &c. Cause the patient to frequently gargle the throat with a solution of chlorinated soda; or, if he be too young or unable to use the gargle well, cause his throat to be mopped or sponged with it. The secretions of course must be attended to; and in the later stages of the disease, tonics, such as quina, or bark, and nitric acid will be beneficial. (Dr. W. A. Bryden, p. 77.)

Dysentery.—In subacute and chronic dysentery confine the patient to bed, and in the recumbent position, that the bowels may be supported and kept quiet, and unirritated by the action of the abdominal muscles. Milk and farinaceous food are most applicable, as least stimulating peristaltic action, and being most likely to be assimilated. In the subacute and severer dysentery of this country no remedy is equal to Dover's powder in ten grain doses, with an occasional dose of castor oil, guarded by a few drops of laudanum, for the removal of fæcal matter. If there be a deficiency of bile, give a little hydr. c. creta; if there be much pain or tenderness apply a few leeches to the anus. In acute cases confined to the rectum, medicines administered by the mouth do little or no good, here give soothing injections with opium.

In the purely chronic form of the disease, the treatment consists in the administration of mineral and vegetable astringents, combined with opium, occasionally using aperients for the removal of fæces and foul secretions. When the ulceration
fined to the rectum or lower extremity of the colon, astringent injections of
of lead, nitrate of silver, sulphate of zinc, and gallic acid, will be most ser-
; But when the ulceration extends more or less throughout the entire ex-
the colon, remedies administered by the mouth, especially the mineral

astringents, act most effectually. In these cases slips of blistering plaster should be frequently applied. In the more advanced stages of the disease, and in the milder cases where we have a healing but lax state of membrane, the stools being bilious and containing but little blood or mucus, the vegetable astringents will answer best. A strong decoction of the Ægle Marmelos, or Bael fruit of Bengal, is very useful. A few drops of laudanum may be added to each dose of this. (Dr. S. H. Ward, p. 81.)

Hare-Lip.—Having pared the edges, not in the usual way, but by an oblique incision from before backwards, slightly concave from above to below, take two or more sutures, each armed with two needles, one at either end; introduce the needles immediately under the skin, carry them completely through the remaining thickness of the lip, and tie them firmly *internally*, bringing the ends of the sutures out at the angle of the mouth to facilitate removal afterwards. A few strips of adhesive plaster may be applied externally. All blemishes arising from the use of pins are thus avoided. (Dr. A. Duke, p. 140.)

Hemorrhoids.—*Epistaxis.*—Two cases are mentioned by Dr. Barker, of New York, the one of severe epistaxis, the other of bleeding from the rectum, owing to internal piles, the rectum being so sensitive that no physical examination could be attempted. In the former he injected into the nostril about a drachm of the compound tincture of benzoin; in the latter, into the rectum, half an ounce; in both, the hemorrhage was arrested without any other unpleasant effects than a temporary burning sensation. (Dr. Barker, p. 58.)

Piles and Prolapsus Ani.—Nitric acid will only prove speedily and effectually serviceable in those cases of internal piles where the diseased texture is only of moderate extent, has a broad base, and presents a very vascular appearance, as though the excrescence was composed chiefly of minute arterial branches. When, however, the hemorrhoidal excrescences are very large, and of a blue appearance, mainly consisting of venous ramifications, nitric acid should not be applied, neither should it when a patient is suffering from what is called an acute attack of piles.

In cases of prolapsus ani of considerable size, when there is not a complication of large or several piles, and when the mucous membrane is simply thickened and relaxed, this remedy will be eminently serviceable. (Mr. H. Smith, p. 150.)

Hernia.—*Wutzer's Operation.*—Mr. Spencer Wells has performed this operation in nine cases, and has met with very encouraging success. Some cases have now passed ten, nine, seven, and three years, without a sign of return. There has not been a failure, relapse, or bad symptom in any one of the nine cases. The instruments and mode of performing the operation are described at p. 144.

Imperforate Anus.—The rectum having been opened, two modes of procedure have hitherto been in vogue,—either to leave the parts to granulate and a passage established when the mucous membrane is not directly continuous with the skin outside,—or to seize the gut (which may be situated an inch or two in depth from the surface) and drag it down to the external parts. In the first case, gradual contraction takes place, and the passage often again becomes obliterated. In the second case, death often ensues, from peritonitis, or pelvic cellulitis. You will avoid both these evils by extending the process of drawing the rectum downwards over a considerable time, using gentle traction, introducing the forceps at certain intervals, and *gradually* endeavouring to accomplish the end. (Mr. R. Davies, p. 152.)

Intestinal Worms.—*Kamala.*—Kamala is a brick-red powder obtained from the fruit of one of the euphorbiaciæ, a native of India. It appears to be a very effective anthelmintic. It yields an admirable tincture, more uniform in its action and infinitely less disagreeable than either oil of male fern or spirits of turpentine. In most cases where the head has been carefully looked for it has been found. (Dr. Ramskill, p. 309.)

Pepsine.—This must not be expected to digest a large quantity of meat at once. A patient taking it must not eat more meat than a mutton chop at once. Pepsine loses its power in a week or ten days, by which time either the stomach has regained its tone, or some other remedy must be employed. About fifteen grains of Boudault's pepsine must be given about twice a-day, before meals, and spread between two thin slices of bread like a sandwich. (Dr. T. K. Chambers, p. 78.)

AFFECTIONS OF THE BONES AND JOINTS, &c.

AMPUTATION *at the Ankle-Joint.—Pirogoff's Operation.*—The essential point in this operation for removal of the foot is to leave the posterior part of the os calcis so as to fill up the heel flap; by this means the limb is lengthened by an inch and a-half or two inches more than by other operations, and the posterior flap has not the bag shape of Syme's, and so does not form a receptacle for a collection of pus. The os calcis is sawn through immediately behind the disarticulated astragalus, the remnant of the os calcis uniting by its divided surface with the inferior extremities of the tibia and fibula. The tendo-Achillis is not divided. (A minute account of the operation by M. Spencer Wells will be found at p. 110.)

EXCISION *of the Elbow.—Heath's Splint.*—The great object in this operation is to obtain a movable joint; to this end always remove not a mere slice from the edge of the bones, but a full inch or so; there is then less tendency to anchylosis. Employ a splint, invented by Mr. Heath, late house-surgeon to King's College Hospital, consisting of four iron plates, well padded, concave on their front surface, to fit the limb, convex behind; these are intended to be placed opposite to one another, one pair above and the other below the joint, projecting portions perforated with a female screw spring from the convex back of each plate. Two iron rods with hinges in their centres, and a small screw at either end, cut in opposite directions, to fit in the female screws of the iron plates, connect the plates above the joint with those below. The plates are now attached firmly by means of straps and buckles, and, if necessary, additional strips of plaster. By turning round the rods the extremities of the bones are separated to the required distance, while by means of the hinges in the centres of the rods motion can be made with the greatest facility: an engraving illustrating this will be found at p. 109. (Prof. Fergusson, p. 108.)

Of the Knee-Joint.—It is not only "meddlesome midwifery" which is bad, but meddlesome surgery. There is no one cause so productive of ill effects after the above operation than changing the splints too soon, and constantly examining to see if consolidation has commenced. After the operation the limb should be placed on a straight back splint very carefully padded, that there may not be any unequal pressure, especially about the heel and the malleoli, where it is especially liable to take place. The two side splints should be movable, that the wound may be readily dressed. The pads should be secured from soiling by being covered with oil silk. (Ed. of "Med. Times and Gazette." p. 115.)

Removal of the Patella in.—Mr. Fergusson is an advocate for the removal of the patella even when healthy, unless it is bound to the condyles of the femur by osseous material. It is liable to give subsequent annoyance. (p. 115.)

Of the Os Calcis.—In the removal of this bone the incisions, one transverse and one longitudinal, are usually made *across* the sole of the foot, but here there is a great disadvantage, namely that cicatrices are left along the line of most pressure. A better plan is to carry a horse-shoe incision from a little in front of the calcaneo-cuboid articulation round and behind the heel to a corresponding point on the opposite side of the foot; dissect up the semi-circular flap thus formed by carrying the bistoury close to the os calcis, the under surface of which is exposed. Then make a perpendicular incision about two inches in length, over the middle of the tendo-Achillis falling into the horizontal one. Detach the tendon and dissect the flaps up close to the bone, carry the blade over the upper and posterior part of the os calcis, open the articulation with the astragalus, divide the ligaments, and turn the bone out. Thus there is no cicatrix over the parts most exposed to pressure. (Prof. Erichsen, p. 119.)

FRACTURES, *Plaster of Paris Bandages.*—This kind of bandage will be found of the greatest use in the treatment of fractures, as a limb may be put up in it within a very short time of the occurrence of the fracture: it sets so rapidly that there is no need to keep the patient in a constrained position for some time, as when the starched bandage is used; it is perfectly cleanly, and does away with the use of splints, and is easily and quickly applied. (See description of mode of appli-

*, p. 124.) It is applicable to any simple fracture where there is not much

displacement, as of the fibula, or tibia, or even the humerus. (Mr. P. W. Swain, p. 124.)

Luxation *of the Inferior Maxilla.*—Direct the patient to open the mouth widely, rest the index and middle fingers of each hand upon the mastoid process on either side, and press the thumbs against the prominence formed on either cheek by the point of the coronoid process; by a moderate degree of pressure the condyles will slip back into the glenoid cavities. The above plan was first recommended by Nélaton. (Dr. E. Whittle, p. 135.)

Wounds of the Hand.—It is a practice often productive of inflammation and thecal abscess (especially in the working classes) to encircle every little wound of the fingers with strips of adhesive plaster. Instead of this, having first cleansed the hand by soaking in warm water, apply merely strips of lint or linen wetted in tepid water. If it be a severe lacerated wound at the back of the hand or palm, pass a finger through an aperture in the linen, which is thus enabled to support the parts very firmly; raise and support the arm on a pillow, and keep the linen constantly wet with cold water dropping on to the part. (Mr. J. Birkett, p. 121.)

AFFECTIONS OF THE URINARY ORGANS.

Bright's Disease.—Our diagnosis as to the state of advancement of this disease will be materially assisted by observing the size of the waxy casts, which increases in diameter as the disease progresses, owing to the tubes becoming denuded of their epithelial lining; this will be more clearly seen by turning to the woodcut at p. 89 of this volume, where the large casts are from tubes which have lost their epithelial lining, and the presence of a large proportion of which therefore indicates an advanced form of disease. (Dr. G. Johnson, p. 87.)

Bronzed Skin.—It is believed from analysis of the blood, that the sugar making function of the liver is interfered with in this disease. The free dietetic employment of sugar considerably relieves the malaise and debility of the disease. (Dr. Todd, p. 104.)

Diabetes.—In a case lately treated by Dr. W. Budd, at the Bristol Royal Infirmary, the patient was allowed an unlimited amount of sugar, with the view of supplying the material, the loss of the elements of which from the body, causes the wasting and loss of strength. No remarkable alteration resulted from this treatment, either as to the increase or diminution of sugar in the urine, but the patient gradually seemed to gain strength, and two months after the adoption of this new plan of treatment, although he was taking eight ounces of sugar and six of honey daily, he was only passing three pints of urine, of specific gravity, 1032. (p. 98.)

Enlarged Prostate.—Amongst other means of treatment, the following are particularly worthy of note. Let the patient sit every morning for about twenty minutes in a tepid hipsbath (90° or 94°, or warmer,) to which the bittern or mother lye of the Kreuznach springs has been added in varied proportions, beginning with half a pint, or pound, according to the form in which it is obtained, to four gallons of plain water. Local applications may be made in the form of enemas or suppositories, containing iodide of potassium and Kreuznach bittern, or bromide of potassium (formulæ will be found at p. 164.) The iodide and bromide of potassium may also be given internally, three to ten grains of the former, to one of the latter, twice a day. (Mr. H. Thompson, p. 163.)

The bromide of potassium given internally in these cases, has a very beneficial effect on the enlarged organ, it may be given week by week alternately with the muriated tincture of iron, for a period of several months. (Edit. of Med. Times and Gazette, p. 165.)

Supposing you have to perform *lithotrity* in a case of enlarged prostate, you must, in order to success, take into account the alterations which have taken place in consequence of the prostatic disease. The two principal are;—first, elongation of the passage by an inch or more; second, formation of a sort of pouch beneath the neck of the bladder, in which pouch the stone usually lies; to overcome t' first, you require to have your instruments several inches longer than usual; y

will best overcome the second by reversing the beak of the instrument when introduced into the bladder, or by tilting the pelvis of the patient backwards, to execute which proceeding quickly, every lithotrity couch should be provided with some mechanical contrivance. (Mr. W. Coulson, p. 161.)

Incontinence of Urine.—When incontinence of urine in children results purely from atony, and is not the result of irritation from urinary causes, apply galvanism by the aid of a catheter in the bladder. It has proved satisfactory in the hands of Mr. Simon. (p. 165.)

A case lately occurred to Mr. Pollock of St. George's Hospital, strikingly illustrating the efficacy of belladonna in incontinence of urine. The patient was a boy aged 10, all the usual remedies had failed, no stone was detected, and the urine was apparently healthy. He was ordered one twelfth of a grain of extract of belladonna three times a day, and five grains of calomel and scammony twice a week. The belladonna produced an immediate effect, marked improvement being noted even after the first dose. After rather more than a month's attendance, he was discharged quite cured. (p. 272.)

Moveable Kidneys.—A knowledge of the fact that the kidneys may, in a healthy person, be in abnormal position in the abdomen, and detectible by external manipulation, is important, lest any errors in diagnosis should be caused from suspecting the presence of some malignant or otherwise dangerous tumour. In these cases the mass is smooth, hard, and resisting, rounded in outline, can be moved upwards and slightly downwards. (Dr. C. J. Hare, p. 84.)

Sounding for Stone.—If it be a noisy struggling child, always give chloroform and inject the bladder; you will thus, by a little extra trouble, be saved the annoyance of pronouncing that no stone is present (and in these circumstances a small and light stone might be easily overlooked,) when subsequently, perhaps, by another person, one is discovered and removed. (Ed. Med. Times and Gazette, p. 287.)

AFFECTIONS OF THE SKIN.

Artificial Cuticle.—A mixture of collodion and castor oil may be used with great success when the skin is abraded by irritating fluids, as urine, in cases of vesico-vaginal fistula. In these cases it may be spread over the excoriated skin of the perineum and thighs; it forms a smooth elastic coating or varnish which resists the action of the urine for many hours. (Dr. Savage, p. 182.)

Burns and Scalds.—Having cleansed the parts, and punctured the vesications, paint over the entire surface an application of two parts of collodion and one of castor oil, which repeat three or four times the first day, so as to form a covering entirely excluding all contact of the atmosphere. When suppuration sets in apply a linseed poultice over the whole surface, and when the slough has separated, an ointment, composed of an ounce of prepared chalk, two drachms of olive oil, and half an ounce of spermaceti ointment, spread on lint. The above is an outline of the treatment at present pursued at King's College Hospital. (Mr. P. W. Swain, p. 179.)

Chaps and Excoriations.—An excellent application is a mixture of glycerine and tannin, equal parts by weight. The tannin readily dissolves in the glycerine. (p. 239.)

Eczema *of the face in Children.*—Dr. Behrend recommends the following application for the crusts which frequently cover the faces of children:—Cod-liver oil, fifteen, and bicarbonate of soda, two parts. (p. 182.)

Enlarged Bursæ.—Even when bursæ are inflamed, and the skin over them red, instead of making any incision into them it is preferable merely to puncture them with a grooved needle. After evacuation of the contents, apply pressure by means of soap plaster and bandage, renewing this from time to time and repeating
[illegible]ncture of the sac also if necessary. The result is generally a safe and per-
[illegible]ure. (Mr. W. Coulson, p. 269.)

[illegible]d Lymphatic Glands.—If you have an enlargement of cervical glands
[illegible]t *of middle* or older age, evidently neither inflammatory nor sympa-

thetic, at once suspect cancer, especially if up under the upper or middle part of the mastoid muscle. The suspicion is increased if the patient has lost weight and strength, and the swelling is hard and not very moveable. Take care and do not confound scrofulous sloughing of the inguinal glands with that of a syphilitic origin. In the former there is not that great external swelling or inflammation seen in the latter; and though the former is often excited by an attack of gonorrhœa, yet there will not be any syphilitic sores on the genital organs. (Mr. Paget, p. 172.)

Erysipelas must be treated with stimulants, as brandy, beef-tea, quinine, ammonia, chloric ether, &c., together with good support. In desperate cases with intense coma and typhoid symptoms, give turpentine in doses of ℥ ij .to ℥ ss., with one-half or one-third the quantity of castor oil: if given in less doses it produces unpleasant head symptoms from the purgative action not being sufficiently decided. The most agreeable application to the part is lard and cotton wool, after relaxing the skin by warm fomentations. The early use of small incisions extending to the depth of the disease is of great advantage in that variety complicated with diffuse inflammation of the cellular tissue.

In chronic erysipelas, apply frequently a solution of nitrate of silver, or small blisters at short intervals, at a little distance from the affected parts. Occasionally when these fail, an issue in the arm effects a cure. (Mr. P. H. Bird, p. 171.)

Idiopathic Erysipelas.—Erysipelas at the present day requires a tonic and stimulating treatment; but at the same time the antiphlogistic treatment formerly employed was then justified. The present type of the disease depends on a deteriorated condition of the constitutional powers of the inhabitants of populous parts. The cause of this deterioration is capable of very important amelioration. (Dr. J. Hall, p. 165.)

Ingrowing Toe-Nail.—The chief paini n the operation for the cure of this affection is caused by the necessity of forcing away a portion of the nail from attachments rendered excessively tender by inflammation. It is not generally known that by rubbing the nail well with nitrate of silver along the line of intended division, about two days before the operation, this tenderness is done away with, and the operation rendered nearly painless, as the caustic causes the nail to loose its attachment to the parts beneath. The best plan of doing this is to gently introduce a bit of cotton wool along the edge of the nail, thus separating it from the overgrowing granulations, and along the edge of this to apply the nitrate of silver. If the nail be very thick it may be necessary to scrape off the blackened parts and apply the caustic a second time. (Mr. J. Long, p. 175.)

There is no such thing as ingrowing toe-nail; it is the upgrowing of the quick through exposing the same, and taking away the natural protection and support of the nail itself. Therefore do not remove the nail, but soak the part well in hot water, and delicately remove all discharge, pass in plenty of very finely powdered burnt alum, cover all the fungus with the same, and on the next and every day do the same until no longer sensitive, then strap down the alum, first putting on the top, not under, a piece of lint. (Anon, p. 176.)

Mentagra or Sycosis is often very troublesome and obstinate. The object of treatment is to destroy the vegetable parasite which causes or is the disease. An ointment of corrosive sublimate, one grain, and lard, two grains, is often very useful, or the white precipitate ointment of the Pharmacopœia. An ointment composed of a scruple of iodide of sulphur to an ounce of lard is strongly recommended by Dr. Thompson. Warm fomentations and poultices are very useful. Epilation is sometimes absolutely necessary to effect a cure. The condition of the digestive organs must be attended to, and purgatives, tonics, and antacids exhibited as required. (Dr. W. Jenner, p. 178.)

Poultice with linseed until the scabs are removed, and then apply constantly a lotion composed of two drachms of manganese, with potassa or permanganate of potash and a pint of water. After the ulcers are healed apply red precipitate ointment every night for several weeks. (Mr. W. Cooke, p. 182.)

Parasiticides.—The following is the formula of the Hospital for Diseases of the Skin for the "Compound Sulphur Ointment" which is in general use against scabies, favus, and true ringworm, diseases which depend upon parasites, which it is necessary to kill:—℞. Of sublimed sulphur half-a-pound, of the ammonia chlo-

ride of mercury half-an-ounce, and of the sulphuret of mercury half-an-ounce; to these well rubbed together add four ounces of olive-oil, sixteen ounces of fresh lard, and twenty minims of creosote. It will be seen that we have here in combination three different drugs, each possessing great efficiency in the destruction of insect and fungus life. The object in view, that of obtaining a vigorous compound, which at the same time shall not be irritating to the skin, is, we believe, exceedingly well attained. (p. 315.)

Pediculi Pubis.—Wash the parts thoroughly, first with soap and water, then with pure water; dry them, then pour chloroform on drop by drop, and rub it in; then cover the parts with a folded handkerchief for half an hour, when another washing with soap and water should be performed, in order to detach the debris of the pediculi. (Dr. Hamal, p. 182.)

Threatened Gangrene.—Where gangrene of the lower extremities, or, indeed, of any part is threatened, nothing is more necessary than that a steady and equable degree of warmth should be maintained. The best means is to wrap the parts up in cotton wool. (Mr. Hancock, p. 177.)

Tinea Favosa.—If the patient be in a poor state of health, improve this by cod-liver oil, syrup of iodide of iron, and bitter tonics; but your chief attention must be directed to destroy the plant: first remove the crusts by a bread poultice, and then apply a solution of corrosive sublimate in water, or mixed with lard, in proportion of eight grains to the ounce, or acetate of copper mixed with lard, half a drachm to the ounce. But, perhaps, the best plan is to apply from the first a piece of lint dipped in a saturated solution of sulphurous acid and covered by oil silk to prevent evaporation. If the disease be in the hairy scalp and has entered the hair follicles, it is very difficult of cure, owing to the difficulty of bringing the parasiticides in contact with the plant, and, consequently, epilation, a plucking out the hairs one by one, is almost essential to a permanent cure. The hairs will grow again if the follicle has not been destroyed by the disease. (Dr. W. Jenner, p. 180.)

Ulcers.—Finely powdered chlorate of potash is an excellent application to cachectic ulcers; it seems to speedily induce cicatrization, and is very convenient of use; it is of great use in cracked nipples and open buboes; it should be dusted into the sac with the finger, and it may also be prescribed internally at the same time. (Mr. Hutchinson, p. 175.)

Apply a strong lotion of chlorate of potash (℥ ss. to Oi. water, with 40 minims of strong hydrochloric acid), which is very stimulating, and converts a foul ulcer into a granulating sore. (Mr. Cooke, p. 177.)

VENEREAL AFFECTIONS.

Syphilis.—*Formulæ.*—The following is the prescription for the mistura hydrargyri bichloridi of the Pharmacopœia of the Hospital for Diseases of the Skin: —℞. Of the bichloride of mercury two drachms, of strong hydrochloric acid one drachm, of spirits of camphor two drachms, of burnt sugar half a drachm, of water a gallon. The dose is from a drachm to two drachms, each drachm containing a twelfth of a grain of the bichloride. An extemporaneous biniodide of mercury is also much used, the formula for the mixture being as follows:—℞. Of the bichloride of mercury two drachms, of the iodide of potassium six ounces, of the tincture of cardamoms two ounces, and of water a gallon. Of this, the dose, a drachm, contains a tenth of a grain of the bichloride, and two grains of the iodide. Simultaneously with the use of either of these mixtures, Mr. Startin almost always orders the "Red Ointment" to be rubbed into the patches of eruption, or applied to any ulcers which may exist. The formula for this "Unguentum Rubrum," the prime favourite of the Institution, is—of the bisulphuret of mercury half an ounce, of the nitric oxyde of mercury half an ounce, of creosote twenty minims, and of fresh lard sixteen ounces. (p. 315.)

AFFECTIONS OF THE EYE AND EAR.

Artificial Pupil.—Mr. Critchett has lately operated on several cases in the

following manner:—Having made an incision close to the corneal edge sufficient to admit of Leur's forceps, the iris is seized just within the opening (that is, very near to its attached border) and so gently drawn out until enough is prolapsed to allow of the application of a fine ligature to prevent its return. By this means the natural pupillary edge of the iris is untouched and merely displaced to the elected position. This is a modification of an operation suggested by a surgeon of Nantes. If the pupil have strong adhesions this mode is not applicable. (p. 311.)

An ingenious suggestion has been make by M. Tavignot in the 'Moniteur des Hôpitaux' for making an artificial pupil by galvano cauterization. He passes in the platinum end through an aperture in the external circumference of the cornea, and applies it to the point he wishes to influence. By this means the size, shape, and position of the pupil can be accurately regulated. Thus far it is deemed only applicable to subjects who have already undergone the operation for cataract; as, in the case of the lens being present, its opacity would be induced. (p. 188.)

Cataract.—The great objection to needle operations is the length of time required for cure. Moreover, one operation rarely suffices, and generally two or even three may be necessary. But the ultimate results of needle operations are far more favourable than those of extraction. Even in hard cataract it is very rare indeed that the lens remains undissolved, so that objections on this ground are of no practical moment. According to Mackenzie, the results of extraction were favourablei n 51 per cent., indifferent in 6¼, and failures in 42¾ per cent. From experience (at the Liverpool Eye and Ear Infirmary) the results of displacement were successful in 69¼ per cent., indifferent in 9, and failures in 21¼ per cent., of which 12 were known to be amaurotic before operation. (Dr. J. B. Nevins, p. 189.)

Discolouration of Conjunctiva *from Nitrate of Silver.*—In those cases where the conjunctiva has become discoloured from the prolonged use of nitrate of silver, try a solution of hyposulphite of soda (gr. x. to ℥ i.) It should be applied by means of an eye-glass, so as to ensure a prolonged contact with the conjunctiva, and should be continued for many months. It was first suggested by its use in photography for a similar purpose. (Mr. Dixon, p. 311.)

Division of the Tear Punctum and its Canal.—For the performance of this little operation a very fine and sharp pair of scissors are preferable to a knife and director, as the operation is accomplished much more rapidly and easily; the slit is always perpendicular and never reunites. The greatest width of the blades of the scissors should be one-sixth of an inch, and their length from rivet to point half an inch. (Mr. Solomon, p. 185.)

Glaucoma.—It seems probable from the morbid anatomy of this disease, that the loss of sight does not depend upon disease of the retina, but upon the effects of pressure upon this membrane and the entrance of the optic nerve. This pressure being relieved the sight is restored. For this purpose Dr. A. von Graefe recommends the excision of a portion of the iris, in its entire breadth from the edge of the pupil to its ciliary margin. The aqueous humour drains away for a day or two after the operation. The hardness of the globe is at once lessened; the pain abates; the dulness and haziness of the cornea disappear, and improvement commences in the deeper parts of the eye. The results are not so striking in chronic as in acute glaucoma, as in the former structural changes have occurred in the retina owing to the long continued pressure to which it has been exposed. For the mode of performing the operation see p. 194. (Mr. J. W. Hulke.)

In cases of acute glaucoma, in which the sight has been seriously damaged in the course of twelve hours, or at most a day or two, the greatest possible benefit is derived from what may be called the new operation for glaucoma. In this disease the loss of sight is probably more owing to the tension from increase of the fluid contents than to any primary disease of the retina itself, and the object of the operation is to relieve this tension. The operation essentially consists in an incision into the upper and outer part of the cornea, and the portion of the iris which protrudes is removed. (p. 199.)

Relief to the tension of the globe may be obtained by simply puncturing the sclerotic with a fine grooved needle directed backwards, and introduced about three or four lines behind the margin of the cornea: it may be repeated if necessary. This plan of procedure is quite as effectual and much easier to perform than

Graefe's plan of iridectomy, and is attended with none of the risks of that operation. (Mr. R. Middlemore, p. 314.)

Inflammations of the Eye.—Except in catarrhal and purulent inflammation, the surgeons of the Moorfields Hospital strongly disapprove of the use of topical stimulants. In catarrhal and purulent inflammations, nitrate of silver drops are used of one grain to the ounce, though in purulent inflammation, especially in infants, an alum lotion of eight grains to the ounce answers better. To remove lime from the eye a vinegar lotion is the most effectual; it should be very freely used. (p. 200.)

Orchitis.—Apply freely every two hours the following application:—Lard. 60 parts; aqueous extract of belladonna, 16 parts. Cover the parts with a linen compress; this promptly relieves the pain and leads to a cure in a mean period of eight days. (M. de Larue, p. 311.)

Pupil, *Dilatation of.*—The pupil should not be dilated before the performance of extraction, though it is desirable that it should be very fully dilated before inspection with the ophthalmoscope for this purpose. A solution of sulphate of atropine, two grains to an ounce of distilled water, answers best, though if in the course of iritis it is deemed desirable to employ belladonna, the extract itself, rubbed up with warm water, and used as a fomentation, is preferable to atropine. The above is the practice at the Royal Ophthalmic Hospital. (p. 188.)

Strabismus.—In performing the subconjunctival operation for the relief of this affection, two very important points are, to make the external incision small, and though vertical, completely below the lower margin of the muscle, and at the conclusion of the operation to apply one or two very fine sutures to the edges of the wound to secure accurate adaptation. The muscle is dragged to the wound by a blunt hook, and though more or less covered by conjunctiva it can easily be divided by a pair of blunt-pointed scissors. (Mr. H. Walton, p. 186.)

Strumous Ophthalmia.—When the intolerance of light is great, the bowels irritable, and the child very restless, a full opiate at night, with bark in the day, is often very quickly effectual. Battley's liquor cinchonæ is the best preparation for children. In cases of pustulo-strumous ophthalmia in children, chlorate of potash, as an alterative saline, is very useful. (p. 266.)

Tinea Ciliaris.—The old incrustations about the roots of the lashes should be removed by means of a pair of broad blunt forceps, meeting only at their extremities. The scab being seized close to the edge of the lid must be gently detached and drawn a little forwards, but not over the whole length of the lashes; these latter should be cut off close to their roots. Nitrate of silver should then be applied on the outer edge of the lids (avoiding the Meibomian orifices.) The scabs cannot accumulate again when the lashes are kept short; the lashes themselves are preserved; and any applications are more readily made. (Mr. J. F. Streatfield, p. 312.)

Tinea Tarsi.—To prevent adhesion of the lids in this disease, the dilute nitrate of mercury ointment is most frequently used at the Moorfields' Hospital. (p. 186.)

Vascular Tumours *within the Orbit.*—In cases of vascular tumours within the orbit where it is necessary to produce sufficient inflammation to consolidate the morbid growth without injuring the eye, inject a saturated solution of tannin. (Mr. R. Taylor, '*British Medical Journal*,' Feb. 20, 1858, p. 154.)

MIDWIFERY AND THE DISEASES OF WOMEN.

Cotton-Wool Pessary.—A simple, inexpensive, and efficient form of pessary in cases requiring uterine support, or the employment of medicated substances in the vagina, is one composed of cotton wool, encased in a pyriform net. It is softer, less irritating, and far more cleanly than the sponge or caoutchouc pessary, and readily absorbs astringent or other solutions which may be prescribed. (Mr. W. Bryant, p. 239.)

Galvanism *in Obstetric Practice.*—Individual shocks applied to the uterus pro- oreciable effects upon it; and a current directed transversely through oduces only a partial contraction of it in the direction of the current; d *current* of electricity directed longitudinally through the uterus,

from the upper portion of the spinal cord, excites the action of the uterus, and singularly enough also accelerates the dilatation of the os uteri. A case of placenta prævia is mentioned, in which several alarming hemorrhages had occurred before labour had commenced. A sustained current of electricity applied in the manner stated for six hours, not only prevented further hemorrhage, but so accelerated the dilatation of the os uteri, that the hand was readily introduced and delivery completed with safety to the patient, although the child, from the extensive separation of the placenta, was still-born. In another case this mode of treatment speedily induced the expulsion of an organised membrane remaining after an early abortion, the ovum having been previously expelled. The patient was much exhausted by repeated floodings. (Dr. F. W. Mackenzie, p. 271.)

Leucorrhœa.—An iodide of potassium injection (ʒ iss. to a pint of water) used three or four times daily, is very useful in the arrest of this affection. (Dr. Payne, p. 211.)

Obstinate Menorrhagia.—In two cases under the care of Dr. Henry Savage, of London, after all other remedies had failed, a cure was effected by injection into the uterine cavity, in one case, of three drachms of tincture of iodine of the London Pharmacopœia, and in the other of four ounces of a mixture (equal parts) of tincture of iodine and water. In the second case the injection was repeated every third day for a fortnight. Both cases were unconnected with pregnancy in any way. In both the uterus was rather increased in size, and softer than natural, the os being slightly open. Injections of alum and tannin had previously been productive of temporary benefit in one of these cases. (p. 209.)

Ovarian Dropsy.—*Injection of Iodine.*—This operation is not so dangerous as supposed by most surgeons. It has proved eminently successful in many cases, in both France and this country; even if the cyst be multilocular, the progress of the disease may be much arrested. (Mr. I. B. Brown, p. 225.)

Perinæo Plastic Operation.—One great element of success in this operation is to remove the *entire thickness* of the vagina as far as the perineal fascia. (Dr. H. Savage, p. 217.)

Polypus Uteri.—The best mode of removing these growths, is to seize them with a pair of long vulsellum forceps, and having dragged them into sight to pass a needle armed with a strong double ligature through the base, which can now be tied in two parts, then cut off the polypus just anterior to the ligature, and plug the vagina with oiled lint. This plan is infinitely preferable to that of either simply cutting off the polypus, or the more tedious process with Gooch's apparatus, where the sloughing of the polypus within the vagina generally causes serious constitutional disturbance, not unfrequently pyæmia, and sometimes death. (Mr. I. B. Brown, p. 217.)

Dr. Savage of the Samaritan Hospital, lately removed a vascular uterine polypus, without pain or hemorrhage, by means of an ecraseur the curve of which can be made to fall into the hollow of the sacrum and the point to pass up into the uterus. When removed by this instrument, the polypus is first seized by a pair of ring forceps, and the chain is passed over these, and drawn tight, precisely as the cord in the ordinary operation by ligature. (p. 214.)

Polyptome.—Dr. Lever has lately introduced an instrument intended to facilitate the removal of these tumours. It combines both the action of a knife and that of a hook. At p. 215 will be found an engraving of this instrument, and the mode of using it.

Prolapsus Uteri.—*Plastic operation.*—In this operation the great element of success, is to denude a sufficient portion of the back part of the vagina, to get contraction of at least the lower two inches. To this end do not denude two narrow slips, but a portion extending from an inch to two inches on each side, commencing at the anal commissure, and extending an inch and a half, upwards into the vagina. (Mr. J. Hutchinson, p. 221.)

Salivation of Pregnancy.—Give quinine in two-grain doses; it is often of much use, and has succeeded when other means have failed. (Dr. Mauthner, p. 233.)

Sore Nipples.—An excellent application is a mixture of equal parts by weight, of glycerine and tannin; the tannin readily dissolves in the glycerine. (Anon., p. 239.)

Tedious Labour.—In cases where labour is arrested, not from any obstacle, but from simple atony and want of pains, where in fact the polarity of the cord is exhausted, try the effect of strychnia; in doses of one sixteenth of a grain to commence with, repeated and gradually increased as necessary. It induces uterine contractions in a very remarkable manner, each dose being distinctly followed by this effect; it does not cause violent or continued action of the womb. In not one of nine cases in which it was administered, did any bad effects follow, and in all, the labour was accomplished within an hour and a half after commencing the use of this drug. (Dr. H. H. Vernon, p. 233.)

Uterine Speculum.—This instrument is far too frequently used, and leads to errors in diagnosis; it can at best only tell us the tint of the os uteri, and even the knowledge of this is often of no use whatever. The finger is far more useful; by it we can make out ulcerations, granulations, fungosities, and the consistence of the cervix. Young practitioners should get accustomed to make their diagnosis by digital examination alone. (M. Velpeau, p. 238.)

Uterine Hemorrhage.—In cases of uterine hemorrhage never give diffusible stimulants, they increase the arterial circulation, and consequently the hemorrhage. The common plan of giving the patient a little cold water, and keeping the body cool, is much more rational. Secale cornutum, *if good*, will answer in most cases; in others a drachm of the tincture of opium, followed by a further half drachm in half an hour, if necessary, will succeed; this not only checks the hemorrhage but relieves the pain. But some cases occur where nothing seems to succeed till the stomach, overloaded with fluids, has by a violent effort emptied itself. This state of the stomach may be anticipated, and in many cases a good dose of ipecacuanha, producing vomiting, will alone stop the hemorrhage. (Mr. J. Higginbottom, p. 206.)

Accidental Hemorrhage.—If you have a case of accidental hemorrhage during labour, and the os be pretty well dilated, a good plan is to apply galvanism to the abdomen, which will probably soon bring on uterine contractions, and the head of the child will descend low enough to admit of the forcepts being applied. This is especially valuable, as in these cases ergot of rye often entirely fails to induce contraction. (Mr. S. J. F. Stafford, p. 208.)

Hemorrhage from Malignant Ulceration of the Cervix Uteri.—A good plan to arrest this is to paint the diseased surface over with tinct. benzoin co. (Dr. B. F. Barker, p. 58.)

Post-Partum Hemorrhage.—Inject into the rectum 4 oz. of turpentine, 4 oz. of cold water, and a handful of common salt, forcibly retaining this by pressure from a folded napkin until violent tenesmus is induced; this will invariably be attended with contraction of the womb. Turpentine is used because it is a powerful stimulant and restorative to the whole system, and, moreover, possesses considerable anti-hemorrhagic properties. (Mr. T. Elliot, p. 205.)

Uterus.—*Effects of Opium.*—Opium has a very different effect in large and in moderate doses on the uterus. In large doses it relaxes and favours hemorrhage; in small or moderate doses, as 25 minims, it stimulates and causes contraction. It is especially applicable in cases of deficient power from exhaustion or fatigue, being here, perhaps, the best remedy which can be employed. (Mr. J. Gabb, p. 207.)

Vomiting of Pregnancy.—In a case which occurred to Dr. Clay, of Manchester, where the induction of premature labour seemed absolutely necessary, from the failure of all other means, for relieving the incessant vomiting—on introducing the finger to guide an instrument for this purpose, the os and cervix uteri were found very tender and painful when touched, and violent efforts of vomiting caused. Considering this state to be produced by pressure on the os uteri, instead of proceeding with the operation, he caused the patient to be laid quite prostrate on the back, with the head very low and hips considerably raised. In about 24 hours the tendency to vomit was considerably less, and small portions of food could be retained: she continued to improve, and ultimately safely completed the period of utero-gestation, but at any time the slightest attempt to resume the upright position was followed by violent retching and distressing vomiting. Dr. Clay places much reliance on the application of a few leeches, by means of the speculum, *rectly to the os* and cervix uteri. (p. 202.)

MISCELLANEA.

Animal Charcoal *an Antidote to Vegetable Alkaloids.*—If to solutions of the poisons of henbane, belladonna, stramonium, or morphia, a little animal charcoal be added, the poison is completely neutralized. This property makes animal charcoal of the greatest use as an antidote to these substances; common black bone will do very well; vegetable charcoal does not possess these properties. (Dr. A. Garrod, p. 259.)

Arsenic, *Therapeutical Uses of.*—The lameness and deformities of chronic rheumatism frequently disappear under a prolonged use of arsenic. It is generally given up too soon. Two cases of this nature are related, in which the most marked benefit was derived from this mode of treatment. About five drops of the liquor arsenicalis should be given after each meal, and continued till the characteristic effects of this drug are produced, when it may be intermitted for a time. Many and obstinate forms of neuralgia are in a similar manner found to yield to arsenic. Arsenic holds the "foremost place" amongst the remedies employed for the cure of chorea, and the author has never yet seen it fail. Besides the various forms of skin disease in which its use is so well known, it has been used very extensively and successfully by Dr. Simpson in amenorrhœa and other disorders of the uterus, where iron appeared to be contra-indicated, as well as in that peculiar affection of the bowels which he has described as prevalent among females, and characterised by copious discharge of membranous shreds, and accompanied by great emaciation and a long train of neuralgic and other nervous symptoms. Dr. Simpson places most reliance upon small and very long-continued doses of arsenic, as two drops of Fowler's solution, or a pill containing the sixtieth of a grain of arsenite of potass, taken three or four times a-day. (Dr. Begbie, p. 282.)

Bichromate of Potash *as an Astringent.*—To remove the fœtor from sloughing wounds, syphilitic sores, ulcers, &c., and where an astringent is useful, a lotion of bichromate of potash, five grains to the ounce, and increased, is very serviceable. In a case of chronic leucorrhœa, where the lips of the os uteri were swollen and spongy, it effected a complete cure after many other remedies had wholly failed. (Mr. E. A. Lloyd, p. 268.)

Cheap Collodion.—Steep white printing or machine-paper in concentrated sulphuric acid from five to eight minutes, and then wash and dry it. It becomes now as stiff as parchment; and if we cut it up small and digest it in ether, we obtain a substance not very different from common collodion, at a much cheaper price. (*Med. Times and Gazette*, April 28, 1858, p. 433.)

Citrate of Iron and Strychnia.—The citrate of iron and strychnia is a preparation which has lately been used with considerable success at the Royal Free Hospital, by Dr. O'Connor. The dose is about three grains three times a day, and taken immediately after a meal. In cases of dyspepsia of an atonic character, in atonic affections of the uterus, as an emmenagogue, and in chorea, it has chiefly proved useful. (p. 272.)

Galvanism.—This most important agent is partly overlooked by the profession from an insufficient knowledge of its utility. It is very useful in cases of painful affections of the feet, the sequel of rheumatic inflammation, with diminished and unequal power of the muscles of the leg and foot, also decreased temperature and tumefaction of the cellular tissue, a condition not yielding to either general or local treatment. The current may be passed along the course of the limb. (Mr. J. Grantham, p. 267.)

Glonoine.—*Nitrate of Oxyde of Glycyl.*—If nitric and sulphuric acids be added to glycerine, and the whole be kept at a freezing temperature, a compound is obtained, which is a nitrate of oxyde of glycyl; this is possessed of the most powerful properties. For use, one drop diluted with ninety-nine of rectified spirit is the proper quantity, so energetic are its properties; of this, give a quarter of a drop in a dessert spoonful of water. In all spasmodic and painful affections, this will give instant relief; it has not been tried in tetanus and hydrophobia. If the pain or spasm be not simply neuralgic, but dependent on some deeper seated cause, it will of course only act as a palliative. Great caution must be exhibited in its use. (p. 294.)

This drug is liable to great variation in strength. Under ordinary circumstances of health and vigour it may be taken in small quantities with safety, but when the nervous energy is diminished by fatigue or suffering, it may act with the greatest power. Several cases are related in which it relieved neuralgic pain very rapidly. (Mr. A. G. Field, p. 300.)

Poisoning by Strychnia.—A case occurred lately in Boston in which violent tetanic spasms produced by swallowing two grains of strychnia, were completely subdued in ten minutes by the administration of chloroform. The patient recovered rapidly. (Dr. Jewett, p. 257.)

Prescriptions *containing Henbane or Belladonna.*—Never in any prescription combine any caustic-fixed alkali with tincture or extract of henbane, as the latter is thereby completely neutralized. Where it is desirable to administer an alkaline remedy with henbane, order either a carbonate or bicarbonate, which are quite as efficacious. The same precautions apply to belladonna and stramonium. (Dr. A. B. Garrod, p. 258.)

Strychnia, *Uses of.*—In cases of organic lesion of the nervous centres, epilepsy, chorea, paralysis agitans, it is useless or even injurious. It is in cases of *functional derangement* where the *nervous powers* are wanting in vigour, where lassitude is a prominent symptom, as in dyspepsia of literary men and delicate females; chlorosis is perhaps the typical disease where it is of most use: if you substitute strychnia for quina in the usual prescription of quinine and iron in this disease, the effects will be truly astonishing. There is a double citrate of iron and strychnia analogous to the well-known preparation of iron and quina; this is particularly applicable; it contains one grain of strychnia in every hundred of the salt. Another convenient way of giving strychnia is to dissolve a grain in two minims of sulphuric acid, and add this to thirty ounces of water in which one drachm of ammonio-citrate of iron has been dissolved; the whole may be then placed in a gazogene and charged with carbonic acid. Give a wineglassful of this daily, immediately before lunch. A very remarkable case of the efficacy of the above is related. (Mr. H. R. De Ricci, p. 49.)

Superphosphate of Iron.—A syrup of superphosphate of iron is particularly applicable to ricketty and weak children; it is very pleasant to take. It contains five grains of iron and five of phosphate of lime. It may be obtained of Mr. Greenish, New-street, Dorset-square. (Dr. Routh, p. 242.)

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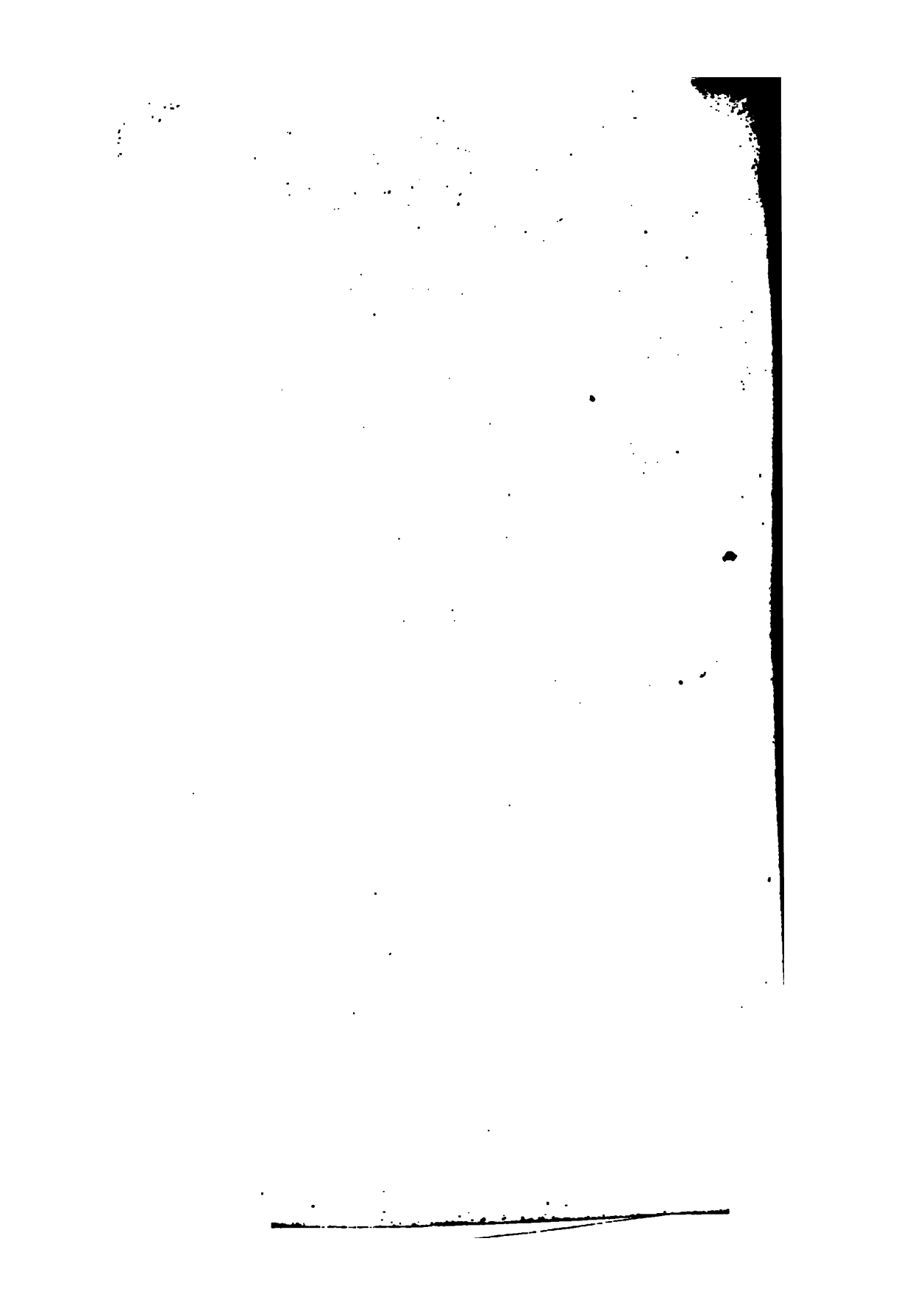
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